RAILROAD GAZETTE

FRIDAY, OCTOBER 5.

CONTENTS.

Contributions.

A Pass Fraud.

South Florida Railroad Co.,
SANFORD, Fla., Sept. 25, 1888.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Having been informed that a person signing himself Walter Taylor, City Passenger Agent, South Florida Railroad, Jacksonville, Fla., is soliciting passes on account of this company, I beg to state that no such person is or has been in the employ of this company, and request that no courtesies be extended to this or any other person, except on presentation of a letter or request from a proper official of this company.

J. E. INGRAHAM, President.

That Shooting Scrape.

Newport News and Mississippi Valley Company (Eastern Division),
LEXINGTON, Ky., Sept. 25, 1888.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I notice in your issue of Sept. 21 an item entitled "A Train Stopped to Witness a Duel," headed Catlettsburg, Ky., Sept. 17, and as the facts are so far at variance with the account given in your paper, I beg leave to submit to you a correct report of it, and ask that you kindly correct it in your next issue.

The truth is, the men were not named Steele and Mackabee, but were two first cousins, Laffette Carpenter and Roe Carpenter, and lived in the vicinity of Stepstone. The conductor did not put the men off and tell them to fight it out, but, as they had reached their destination, they got off, and after doing so the shooting occurred, and Laffette Carpenter was killed. The train did not wait any length of time more than was necessary to discharge and take on the passengers at that station, and the party who did the killing, represented as "Steele," did not board the train, and proceed home, as stated. I noticed the same article in several of the local papers, but did not think much of it as coming from them, but I must say that when a paper of the circulation and standing of yours comes out with such an article, I feel that it is nothing more than proper that I should ask you to set us right in the eyes of our railroad friends and others who read your paper, and I am perfectly satisfied that you will freely do so. The men were not fighting on the train as reported. If is true they were wrangling and quarreling, and I have discharged the conductor for not taking more prompt action in the matter than he did.

Let me ask you to have the kindness to inform me who gave you this information from Catlettsburg. Feeling that the *Railroad Gazette* is a friend of the railroads, I believe you will not hesitate to accommodate me in this particular.

J. D. YARRINGTON, Second Vice-President.

[The item, as printed in the *Railroad Gazette*, was taken from the regular press dispatches of the New York daily papers. The unduly large share of romance in proportion to the reality in it, is doubtless to b attributed to the fertile brain of an enterprising reporter at Catlettsburg.—EDITOR RAILROAD GAZETTE.]

A Library Experiment.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Like most other libraries, the Bridgeport (Conn.) Public Library is used by the inhabitants of Bridgeport and surrounding towns as a bureau of general information. So many queries related to railroad travel, that last July we sent a postal card to the general passenger agents of the principal railroads, asking for one copy of each of their summer pamphlets for the use of our readers. They promptly responded with the most bewildering variety of railroad matter, ranging from the humblest time-tables to elaborate bound volumes. So great was the interest of the collection that we had a special case constructed in the reading room for its display, and visitors are constantly admiring the artistic beauty of many of the "Guides."

We began our experiment a little late for the summer season, but sufficient use has been made of the pamphlets to show how highly people appreciate the convenience of planing their routes in a comfortable room with all the literature on the subject at hand. The railroads have kindly undertaken to supply us constantly with their publications, and the picturesque case of "Travelers' Guides" will thus become a permanent feature of the library.

To the best of our belief this is a new venture in library work; but in any case the experiment seems worth trying in other railroad centres. We are now collecting pamphlets on winter resorts and the modes of reaching them, and any contributions relating to these, or to general travel, will be gratefully received.

A. HILLS, Librarian.

Rule 523.

RICHMOND, Va., Sept. 26, 1888.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Please tell me if the phrasing of General Time Convention Rule 523 is correct. It reads as follows: "Orders once in effect continue so until fulfilled, superseded or annulled. Orders held by or *issued for* a *regular* train which *has lost* its rights, as provided by Rule 107, are annulled, and other trains will be governed accordingly." As it appears to me orders cannot be issued for a regular train which *has lost* its rights, as the train then becomes an extra. Would not the rule be strictly correct if it read: "Orders once in effect continue so until fulfilled, superseded or annulled. Orders held by or issued for a regular train are annulled when the train *loses* its rights as per Rule 107, and other trains will be governed accordingly." The rule as it now reads says distinctly an "order issued for a regular train which *has lost* its rights," etc.

F.

[Our correspondent points out a palpable flaw in the language of the rule cited. The defense generally offered for ambiguous language, or that which is not concise, is that "the men will be sure to understand the meaning." Doubtless that excuse will hold good in this case, but we lay the criticism before our readers, who can judge for themselves. To carry the question to a fine point, fault might be found with the revision proposed above, for the word "annul" implies action by some authority. The idea to be conveyed to the trainmen is that by the expiration of the time limit the order becomes null, without action by any one. Perhaps it would be better to state it thus:

When a regular train loses its rights, as per Rule 107, all orders held by it, or which have been [or may afterwards be] issued for it as a regular train, become worthless and of no effect, and other trains must be governed accordingly.

The first clause of the rule should then read:

Orders once in effect continue so until they are fulfilled, superseded or annulled, or until they expire by time limitation, according to Rule 107.

The words in brackets embody the idea expressed in the original form which gave rise to this criticism. Doubtless the words "issued for" were added after the rule had been deemed finished. "Orders held by the conductor, engineman, operator, or any person, for a regular train which has lost its rights," etc., would perhaps be the most accurate expression of the committee's thought.—EDITOR RAILROAD GAZETTE.]

The Chicago, St. Paul & Kansas City Case.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The purely technical grounds on which this case was tried before the Inter-state Commerce Commission really exhibited only one side of the question. It seems to me that it will be of interest to look for a moment at some other points at issue. Doubtless the commissioners cast an eye beyond the formal complaint, as indeed they must have done. The Chicago, Burlington & Northern has been called a wrecker and other names for making lower rates than the other Chicago-St. Paul lines; but had it not some good arguments on its side? This road was confined to the traffic between these two points. The Milwaukee and the Northwestern had important feeders extending into the wheat districts, and by the milling-in-transit plan confined the Burlington to the free wheat and flour of Minneapolis. Again, the rate between Minneapolis and Chicago cannot be considered alone, it must be taken into account as part of a total carriage to the seaboard. The charge for this through carriage has all summer been fixed by other carriers than the Burlington. It must not be forgotten that Duluth is as near New York by water as Chicago is and will receive nearly the same rates. Then, too, the Soo line, which was built by Minneapolis milling capital expressly for this purpose, takes from the St. Paul-Chicago roads their former ability to dictate rates. If, therefore, the Burlington had advanced rates as demanded by its Chicago competitors, the probabilities are that they all would have lost the through traffic—unless they had succeeded in their efforts to induce the St. Paul & Duluth to enter a combination to advance rates via the lakes, and had also scared the Soo managers into agreement by more outbursts of "public opinion" (carefully prepared and fired off) against the rail competition through Canada.

By this brief statement it will be seen that there were good reasons for making a low rate between Chicago and St. Paul, reasons which were not advanced at the hearing. Why were not these reasons put before the Commission? It is possible that the omission was intentional. In fact, except for the effect upon Chicago's trade, there was no need of going before the Commission at all. A through rate between Minneapolis and New York low enough to meet lake or Soo competition, together with a rate between Minneapolis and Chicago as high as they pleased, would have fixed the whole matter. But Chicago tradesmen would have made short work of any freight manager who dared propose such a thing, for such a plan would mean a lower through rate St. Paul to New York than the rate St. Paul to Chicago plus that from Chicago to New York. It would not come under the long and short haul prohibition, but it would half ruin the "stop off" trade of Chicago. But little flour or wheat could be brought from the Northwest and resold at the seaboard, not so many Eastern manufactures could be brought to Chicago and resold in Minnesota if the through rate was less than the sum of the local rates. There are no more intelligent merchants anywhere than in Chicago, and the absence of any pleading of these facts and of their sure results is certainly significant. There doubtless were in the minds of the Chicago, St. Paul & Kansas City people very good reasons for advancing the half-baked arguments cited, and for leaving the real and convincing statement of their troublesome position out of sight. The whole matter is not so much a question of allowing the Burlington & Northern to quote disastrously low rates, as it is a question of saving Chicago's threatened trade to and from the Northwest. The cry about "saving their local revenue" on the part of the Milwaukee, the Northwestern and the other granger roads, is partly misleading. They can save their local rates at any moment when they are willing to make Chicago a local station, too.

The interesting question then arises: How long can Chicago ward off this impending loss? It is only a question of time; and the loss to Chicago will be fully made up by her gains in other directions. Has that city any inherent right to have all through rates stop at her gates? Manifestly not. Suppose New York should demand from the Pennsylvania that all shipments for Boston could be stopped at New York, and resold in Boston at the same through rate? That railroad would point to the short lines to Boston on the north, and say that it could only secure traffic at the northern rates, while the New England carriers would say that the proportion of the through rate applied to all New York shipments for Boston would ruin them. This is just the position taken by Chicago on the traffic between the seaboard and the Northwest, and it cannot be justified except by force of arms. The telegraph brings word that the all rail rates, New York to St. Paul, are to be advanced to $1.10, first class. The lake season is almost over, and if the Chicago roads can bulldoze the Soo line into an advance, they are secure for the winter. But as sure as the spring comes (and perhaps before, if the Soo people show fight), so sure will high rates on through merchandise between Chicago and St. Paul come down. As it is, the advance is made by ignoring the lake rates during October. These rates are 50 cents, first class, as against $1.10 mentioned above. The Chicago-St. Paul roads must sooner or later choose between seaboard traffic at through rates or the Chicago and local traffic at low figures.

JUDEX.

Railroad Crossings.

CHICAGO, Sept. 27, 1888.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The agitation which prevails in several of the large cities, and indeed in some of the states, regarding the safety of the public at these places of danger, has compelled the civil engineers to give a good deal of attention to the subject, and among others I have been studying the problem which is before us. I find that in the most common case, where the railroad and the highway are upon nearly the same level, it is necessary to raise the highway to a height of 20 ft. in order to give a satisfactory clearance for the railroad under the bridge which crosses its tracks; and assuming that an inclination of one in fifteen is not too steep for the traffic of the highway, a distance of 300 ft. is required at each end of the bridge to ascend and descend. This distance is to be had in the country without much difficulty, but in cities and large towns I find the question of land damages to be, somewhat unexpectedly, one of the serious elements in the cost of an overhead crossing.

An analysis of the reasons for the height required by the railroads for clearance, discovers that 5 ft. of it, the last 5 ft., is necessary in order that the brakemen may be able to run along the tops of the freight cars. Of course, this 5 ft. is added to the bottom of the abutments and embankments, where they are thickest and increasing in thickness as they go down. The embankments widen at the rate of 3 ft. horizontal for each foot of added depth, so that we must have 15 ft. more in width for each embankment; the inclines at each end of the bridge must be, together, 150 ft. longer than would be required if the brakemen were removed from the top of the train. By calculation it will be found that in the most ordinary case the effect of this requirement of 5 ft. of unnecesary height is to nearly double the cost of the construction of the crossing: leaving out of sight the additional horse power required, for all time, in raising each load that crosses the bridge 5 ft. higher than is necessary. In special cases, where land damages enter largely into the calculations, the extra room required for the higher crossing has been almost prohibitive, and this added 5 ft. has become as serious a matter as the proverbial inch on a man's nose.

So long as it is considered necessary to retain the brakemen on top of the freight trains, the civil engineer will have to make provision for them. He may, therefore, well add his voice to that of other departments in urging the universal adoption of continuous brakes, by means of which the height of crossings may be so much lessened and the cost of structures so much reduced. In the construction of crossings of one railroad by another the same considerations of economy and convenience hold, yet it should be pointed out that in railroad gradients the difference of 5 ft. is more important even than upon a highway. The changing of a crossing of one road by another from grade to overhead becomes easy,

when it may be accomplished by depressing one grade only 7 ft. and raising the other the same.

In counting the benefits to be secured by the adoption of automatic brakes, not the smallest, as I think, will be found to be the removal of the men from the dangers and exposures attending their present mode of riding and running on the top of freight trains, and those managers who are humane enough to care for this, may also be strengthened in their purpose by the knowledge that the important economies may be thereby effected which I have tried to indicate. The members of my profession have not seemed generally to apprehend these facts, and have remained rather passive in attitude towards the use of continuous brakes, regarding that subject as one for the exclusive discussion of the operating department; and it is to invite their attention to what I think a very serious interest which they have in the question that I have written this letter.

Archimedes Stevenson Watt, C. E.

The Ratio of Population to Railroad Mileage in the United States.

To the Editor of the Railroad Gazette:

It occurred to me recently to calculate the ratio of the population of the United States to its railroad mileage at different periods, with a view to seeing what the decrease of this ratio was. I took for this purpose simply the quinquennial periods, at which I was able to obtain the population from the census returns. Noticing that the successive ratios seemed to follow a sort of law of decrease, I platted them, and obtained a diagram, as per fig. 1.

The result was so striking in showing a decrease expressed by a formula of some sort, and broken only by the enormous convulsion in our economic development caused by the Rebellion, that I thought it worth while to pursue the investigation further into detail. By the use of the census chart of population I was able to interpolate values for the population for the intermediate years of the quinquennial periods, by which I obtained the following table, in which the population is given in thousands:

	Population in thousands.	Miles railroad.	Persons per mile.		Population in thousands.	Miles railroad.	Persons per mile.
1850	23,191	9,021	2,571	1871	39,650	60,484	655
1851	24,200	10,982	2,204	1872	40,750	66,362	613
1852	24,800	12,908	1,921	1873	41,850	70,469	594
1853	25,700	15,360	1,674	1874	42,950	72,574	592
1854	26,400	16,720	1,580	1875	44,060	74,286	593
1855	27,256	18,374	1,484	1876	45,360	76,998	588
1856	28,200	22,021	1,269	1877	46,600	79,279	587
1857	29,100	24,668	1,180	1878	48,000	81,966	585
1858	29,800	27,133	1,098	1879	49,300	86,687	568
1859	30,700	28,954	1,061	1880	50 152	93,837	534
1860	31,443	30,800	1,021	1881	51,823	104,813	494
1861	32,300	31,451	1,026	1882	53,649	113,829	471
1862	32,900	32,285	1,019	1883	55,325	121,592	455
1863	33,500	33,335	1,005	1884	56,950	125,566	454
1864	34,100	34,073	1,001	1885	58,484	128,967	453
1865	34,748	35,250	986	1886	60,029	137 986	436
1866	35,600	36,992	962	1887	61,719	149,913	412
1867	36,300	39,441	920	1888	63,493	.....	....
1868	37,100	42,420	874	1889	65,263	.....	....
1869	37,800	47,035	804	1890	67,069	.....	....
1870	38,558	53,105	726				

[Note.—Since the census satistics are given to the 30th June, while the railroad mileages are to the end of the year, the populations per mile in the above table are not absolutely correct at any given time, but for comparative purposes they represent the situation correctly.]

From the first and second columns the ratios in the third are obtained, which are simply the number of people for each mile of railroad at the given time. These platted to scale, with the years on the horizontal line and the number of people to the mile of railroad for each year laid off vertically, gave the irregular full line in fig. 2. This diagram I carried back to 1850 only, because back of that year I think it may be assumed that the increase of our railroad system was limited simply by the ability to find capital for its construction. Since that time it seems to have been regulated more and more by other causes. The most prominent of these are: first, the increase of population; second, the increasing wealth per capita and consequent demand for minute ramification of the railroad system; and third, the moving apart of the centres of food production, population and manufacturing industry, making longer lines of railroad necessary to put these centres in communication.

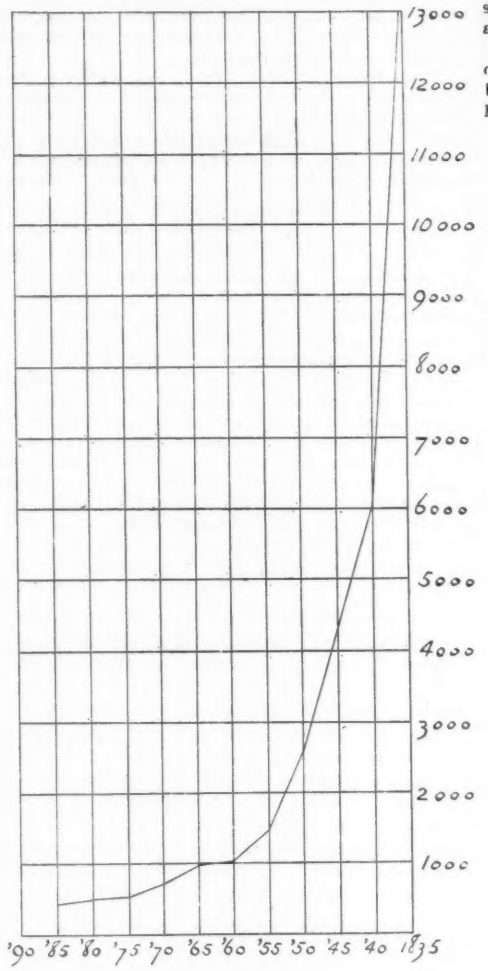


Fig. 1.

Fig. 2.

RATIO OF POPULATION TO RAILROAD MILEAGE.

In platting an average line on the second diagram it seemed to me proper to make a break at the war period, as this was so definitely indicated by the first diagram. Drawing a line bisecting the waves of "boom" and "depression" in the ratio line, it takes naturally the curved form shown, cutting the line of actual ratios in the years 1864, 1870, 1876, 1881, 1885 and 1887. It may fairly be assumed that at those points the development of our railroad system was normal and that the curved average line represents the normal decrease of population to a mile of railroad according to the conditions which have prevailed in this country. The years in which the actual ratio line falls below the average line are years in which our railroad system was larger than our needs, while those in which the average ratio lay below the actual ratio are years when more railroad was needed. When the actual ratio curve runs parallel with the average or ideal curve we were building railroad at a normal rate, and when the actua lline bends down towards the average we see the beginning of over speculation ending in one of the crises represented by the bottoms of the waves. It is interesting to notice how the waves of speculation decrease in length and amplitude as the years roll on, indicating a tendency of railroad building to conform itself more closely to the actual needs of the country.

I have drawn a broken line to indicate what would probably have been the normal decrease of population per railroad mile had the war not intervened. It is drawn on the assumption that this line would bisect the waves in the actual decrease before the war, and that by the present time we should have nearly exhausted the effect of the war in its checking action on the decrease of the ratio.

The inquiry enters of course into a speculative stage when we attempt to predicate from the diagram what should be the normal growth of our system in years to come, since we can neither say exactly what the population will be in those years, nor what the decrease of the ratio of population to railroad will be. In fact the diagram from 1880 on is slightly tainted with uncertainty as to what the population actually is.

That this can be calculated for a short distance ahead with considerable accuracy will appear from the following facts: In 1815 Elkanah Watson, of New York, predicted the population of the United States for each decennial period down to 1900. His results, as given by General Walker in the Encyclopædia Britannica article "United States," compare as follows with the actual population by the various decennial censuses.

	Watson.	U. S. Census.	Watson's error.
1820	9,625,734	9,633 822	−8,088
1830	12 833,645	12,866,020	−32,375
1840	17,116,526	17,069,453	+47,073
1850	23,185,368	23,191,876	−6,508
1860	31,753,824	31,443,321	+310,503
1870	42,328,432	38,658,871	+3,770,061
1880	56,450,241	50,155,783	+6,294,458
1890	77,266,989	.....	.....
1900	100,355,985	.....	.....

Watson's figures were presumably based on the natural increase of population as observed before his time. Their accuracy for four successive censuses succeeding the date of his calculation is very remarkable, and indicates what may be done in this line.

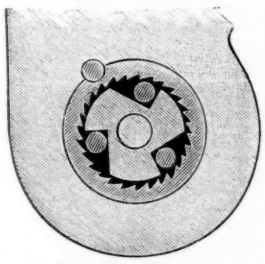
Since his time, by taking the census figures and deducting the approximately known quantities of emigration in each decade, it appears that the percentages of increase in native born citizens are as follows for the decades ending with the years given:

1830.	1840.	1850.	1860.	1870.	1880.
31	28	25	24	15	23

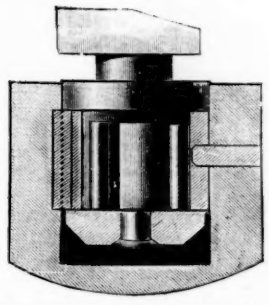
It may he fairly assumed that if the war had not interrupted the percentage of increase from 1860 to 1870 would have been 23.5, and 22.5 would come pretty near the increase for the present decade. The increase per year to pro

Lock Sealed.

Seal Plate.



Enlarged Vertical Cut of Locking Apparatus.



Enlarged Horizontal Cut of Locking Apparatus.

AUTOMATIC SEAL LOCK.

Made by the AUTOMATIC SEAL LOCK CO., *Pittsburgh, Pa.*

duce this gross increase of native born population for the decade is 2 per cent.* On this basis, adding the known immigration for each year down to the present one, the figures given by me are calculated. Half a million immigrants per year have been allowed for 1889 and 1890. The result given cannot be far from correct. You have yourself estimated the population to the 1st January, 1886, as 59,200,000—*Railroad Gazette*, 1886, p. 98. The figures above given are to June 30 of each year. Averaging my figures for 1885 and 1886, the result is 59,256,500, in very close accord with your own.

If we prolong the curve on fig. 2 representing the normal decrease of population per railroad mile, with the radius found for it for the 10 years previous to 1888, it shows in 1890 396 persons per mile of railroad. With the above figures it is a simple matter to calculate the increase of mileage which should be made in the present 5 years.

The mileage in 1890 would be $\frac{67,069,000}{396} = 169,366$. Deducting the existing mileage in 1885 from this, we have 169,366 — 128,967 = 40,399 miles, as the legitimate increase in the 5 years, or an average of 8,080 miles per year. This may be considered as about the minimum required by the growth of the country. To get at a maximum limit of our needs in this direction, I have on fig. 2 continued the rate of decrease in the population ratio which the average line shows between 1884 and 1887 on to 1890 by the short dotted line shown, viz., instead of a reduction in the rate of decrease I have assumed the same decrease of population to miles that the average line calls for in the last three years as continuing in the next three. The result is 389 persons per mile in 1890, giving $\frac{67,069,000}{389} = 43,446$ miles to build in the 5 years, or 8,689 miles per year. As we had already built 20,946 to the beginning of the present year it is pretty clear that a halt must be called soon, unless we are to have eventually a still more severe depression in stock values than we have been through this year.

In the above increase of mileage for the five years, it is of interest that an analysis of the increase shows only 18,928 miles, due directly to increase of population at 453 people per mile. The remaining 21,471 miles will be built to supply the increased demands for railroad facilities in the five years on the part of the existing population, shown by the decrease from 453 to 396 persons per mile. In case the ratio, 389 per square mile, should be the correct one for 1890, the mileage built to supply the increased demands of the population would be 24,518.

A further point of speculative interest in this discussion is the minimum number of people per mile of railroad which can furnish support to the whole system. A prolongation of the ratio curve with its present radius indicates a minimum of about 325, which would be attained in 1898. It seems probable, however, that the curve will become flatter, making the minimum something less than 325, and at the same time postponing the date at which we shall reach hard pan in this respect.

W. HOWARD WHITE.

*This allows for the compound interest, as it were, at which the increase proceeds.

Handling Ballast.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Noticing the editorial in your issue of Sept. 21, relating to the question of ballasting in connection with the report of the Roadmasters' Committee on Labor on Track, you say: "Stone is more stable and less easily washed out, but gravel is more elastic; stone permits the water to flow away more quickly, but gravel is more easily handled; and so the advantages of one are offset by those of the other, and it is impossible to strike a balance between them that will hold ground any where." [Should be "hold good every where."] Laying aside the question of elasticity and considering that of handling, striking the balance is very readily accomplished by the use of "Rodger's ballast car and spreader," which was fully described by you some weeks since. This device will ballast with stone as cheaply and quickly as with gravel or any other material.

At an exhibition given a few days since a car containing 20 cubic yards of 2½ in. stone ballast was unloaded, and the ballast perfectly spread, as no hand labor could possibly do it, within 30 seconds from the time the door was opened and the engine started. A train of 25 of these cars containing 500 cubic yards of stone ballast can be unloaded and spread, with the services of one man—aside from the engine crew—inside of ten minutes, and the track perfectly flanged, ready for any train following. It seems to me that this strikes the balance as far as labor is concerned.

WILLIAM S. BREWSTER.

[A perusal of the context of the article in which the term "handling" was used, will show that reference was had to the work incident to the maintenance or repair of track, not to the distributing of new ballast. —EDITOR RAILROAD GAZETTE.]

Automatic Seal Lock.

The automatic seal lock for freight cars, mail bags, express boxes, etc., is the invention of Eduard Meise, of Pittsburgh. It consists of a cast-iron or steel body part or hasp, one arm being enlarged and bored out to receive a steel locking apparatus which rotates in one direction only. The other arm has a longitudinal slot extending in the direction of the bow.

The arms of bow or hasp are connected by a frangible cast-iron seal plate, provided with a stop lug on its upper surface, and bearing name of railroad and number of station. One end is provided with a lip which is inserted in longitudinal slot in one arm of bow; the other or forked end of seal plate drops over locking block in opposite arm.

Turning locking block one-fourth turn, it engages with stop lug on seal plate, and the lock is securely sealed, while to open the lock it is only necessary to break the connecting plate.

The locking apparatus consists of a block turning within a sleeve, the inner surface of which is longitudinally corrugated. The shaft or journal portion of the block fitting within the sleeve is cut away on one side to form the cam face with the shoulder, and a cylindrical pin fits within the space so formed between the bearing and the block shaft journal. This pin rests against the shoulder when the block is turned in one direction, and permits the block to be turned in the sleeve. On attempting to turn the block in the opposite direction, the pin is forced by the cam face against the interior of the bearing and jammed between the bearing and block journal. This prevents the turning of the block, the corrugated interior surface of bearing assisting in holding the pin and preventing its slipping around within the bearing.

For greater security three pins are inserted at equal distances in the block, all working on the same principle. The locking apparatus, made entirely of steel, is firmly secured in enlarged arm of bow or hasp by two cylindrical pins ⅛ in. diam., one horizontally and one longitudinally. The longitudinal pin is the same length as the corrugated sleeve and rests one-half in both sleeve and body part, each being bored out to suit the purpose. This pin is to prevent the sleeve from turning in its socket. The horizontal pin extends from the outer surface of body part nearly to the inner surface of corrugated sleeve and prevents locking apparatus from being pulled out.

It is claimed that this seal lock has the following advantages:

The lock contains no spring, wire, lead or glass to be readily destroyed or made inoperative by heat, cold or acid, and requires no tools or presses to seal. The seal plate is always in sight and name of railroad and number of station is sufficiently large to allow of name and number being inspected while the train is in motion. This lock cannot be carelessly sealed, as turning locking block sufficient to keep seal plate from jarring off in transit makes it impossible to remove seal plate intact. It cannot be tampered with without detection; when once locked it cannot be opened without breaking seal plate or lock. The lock is chained to the car and allows the opening of doors for ventilation, at the same time being securely sealed, and is adapted to all kinds of car doors without requiring any change in their construction. When not used as a seal the lock can be used as a pin to place through staple. An appreciable saving of time is made in sealing. This lock also permits the adoption of a suitable inspection tag, which adds very little to the expense.

Any further information or sample of lock for inspection may be obtained of the makers, the Automatic Seal Lock Co., Pittsburgh, Pa.

Apprenticeship in the Car Paint Shop.*

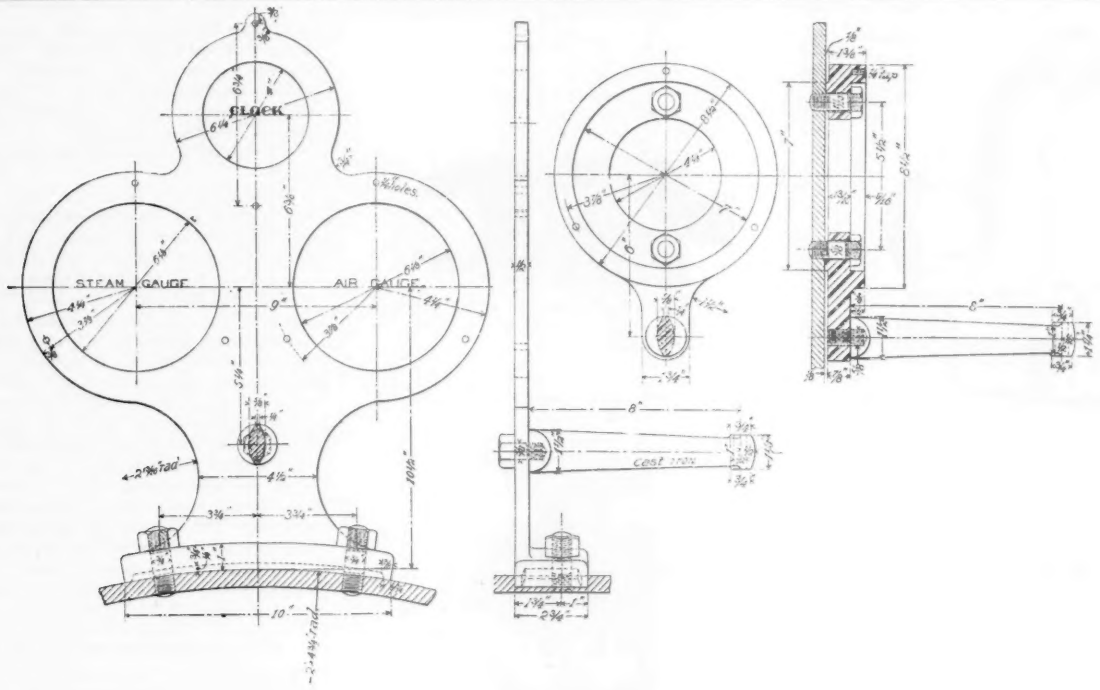
Apprenticeship in the passenger car paint shops, if not in all other shops in this country, is a thing of the past, and the question naturally presents itself, where are we to obtain recruits to supply the places of that large number of skilled workmen, who, by reason of age or other disabilities, are annually lost from the ranks of skilled labor? and why is it that the boys of this country are not taught to become skilled workmen, to supply the loss? Gen. Francis A. Walker, the head of the very successful Massachusetts Institute of Technology, in speaking on this subject of apprenticeship, is quoted as saying that "As it exists to-day it is an advantage to neither party, the apprentice can only learn a narrow specialty, so narrow, as a rule, that its only value to him is the meagre pittance which he can earn from day to day at the sacrifice of any further educational advantages." Here is an important problem for some of our labor reformers and poverty abolitionists. The solution would result in much good, for if we do not find some method by which the boys of America can become skilled workmen, we shall be compelled to get them from some country that affords boys that opportunity, and that means the filling up in time of all workshops in these United States with aliens to our laws and usages, because skilled laborers must be obtained somewhere, and if we refuse to make them, we shall have to get them from where they are made. But what has brought about this state of affairs in the industrial world and on whom rests the blame? Clearly one answer is, organized labor itself; blinded by selfishness and ignorant of its best interests, it long since issued its fiat that only a limited number of boys shall be received as apprentices in any one shop, that only a limited number of American boys shall be permitted to learn a mechanical trade, that no other means of earning a livelihood shall be open to them, but that of unskilled labor. They may compete with Italians and Huns in building railroads and digging ditches, but not with skilled mechanics, and as fast as the present army of skilled labor becomes reduced by death, old age, or other disability, they can stand aside and see their places filled with men of other nationalities, who have been afforded the opportunity to acquire that skill which has been denied them, thus leaving the best paid work in the hands of foreign trained workers who are too old to become thoroughly Americanized and who do not have much, if any, sympathy for our institutions. Another obstacle to the training of apprentices is the general adoption of the contract or piecework system in all large shops, which, while highly beneficial in its workings both to employer and employé, in respect to apprenticeship bars the youth of the country from acquiring a knowledge of the mechanic arts, as much so as the most ardent trades unionist could have desired. The cause is obvious, the piece worker has no time to devote to the apprentice, he has no pecuniary interest in him and cannot be expected to give of his time to his instruction, and who else is to teach him and how is he to get the knowledge and instruction. This is the problem we have to deal with. What does organized labor offer as a substitute for apprenticeship? Nothing as yet. Industrial schools supported by the state has been suggested, but can they be made to supply the place of shop training? I think it doubtful, besides the expense would fall directly upon the laborer, who would be taxed to support them, besides having the boy to support while at school learning the trade, whereas in a shop the boy is at least partly self-supporting. And just how far such schools would be serviceable it is hard to tell; while a smattering of the trade might be learned, and perhaps some specialties be acquired, such as ornamental sign writing, graining, etc., it is also true that very much of the essentially practical part could not, and, besides, such instruction would be very expensive and the work done would have no market value.

To be a skilled workman requires that one shall have served a certain time as an apprentice under the instruction of a master in the business, profession or trade, and not only that, but it requires that he be constantly employed in the practice of it, otherwise he will become unskillful. Good mechanics are always in demand, and the supply is never in excess, and remunerative positions are always open to such; therefore the young man who is thoroughly proficient in all parts of his trade, both theoretically and practically, is sure of success in life, all other things being equal.

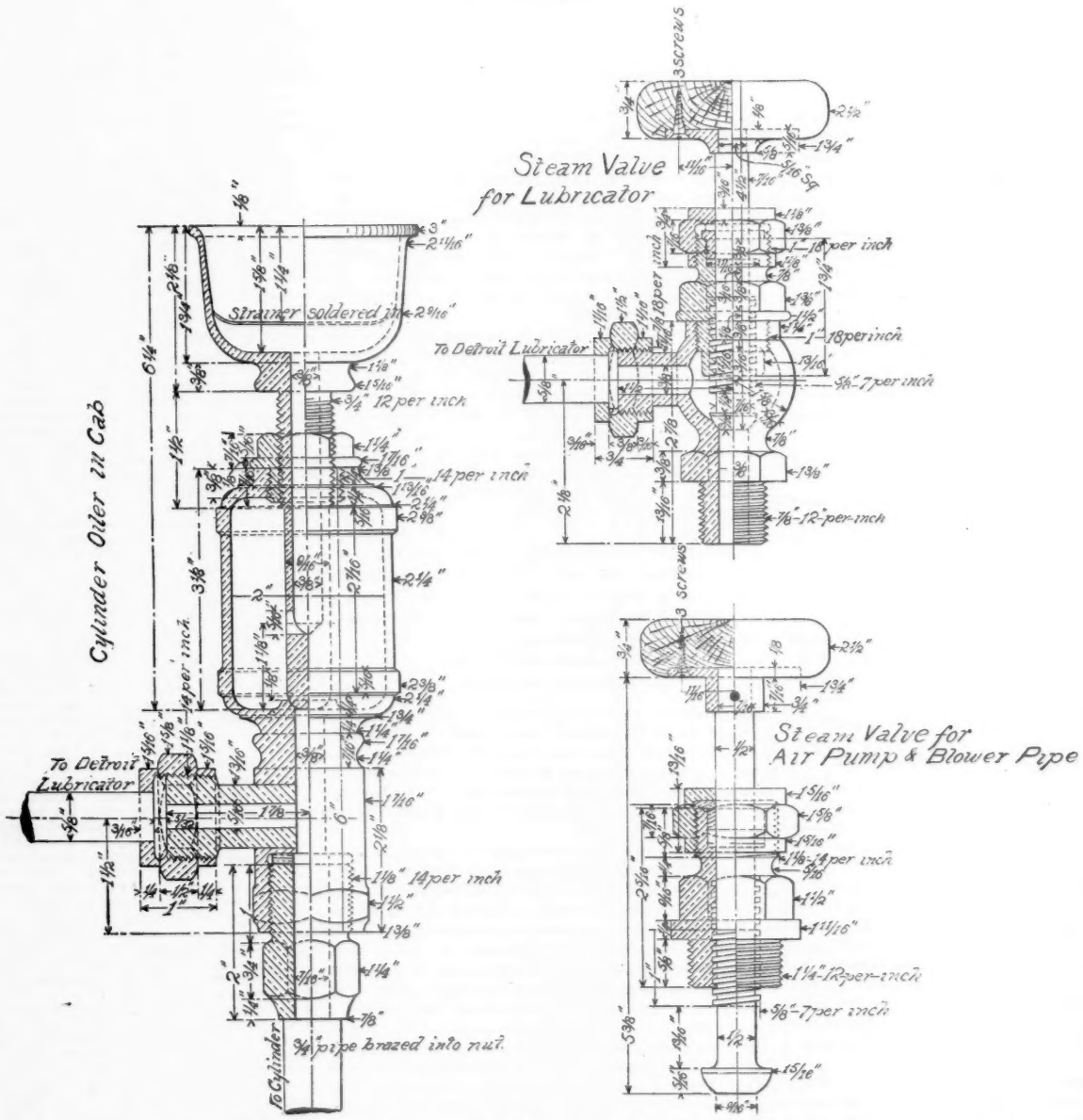
This proficiency can only be obtained in the workshop and under the apprenticeship system, which should be re-established on a sound and practical basis, making it obligatory on all who want to learn a trade that they serve a certain number of years under a master workman, being subject to him during that time in all things reasonable. At the expiration of his term of service, the apprentice should be furnished with a certificate, as evidence of his having duly served such apprenticeship.

It has been said that intelligent boys cannot be had, who are willing to be bound for three or four years to a trade, but in my experience the number anxious and willing outnumbers the opportunities, and I think the unwillingness, where it exists, is due to the practice which prevails in many shops of keeping the boys for too long a time at pot cleaning, sweeping, running errands and other drudgery, which is not

*Paper read by Mr. F. S. Bail (Pennsylvania) at the Cleveland meeting of the Master Car Painters' Association.



Gauge and Lamp Stands.



DETAILS WOOTTEN EXPRESS LOCOMOTIVE, UNION PACIFIC RAILWAY.

a part of the trade and should furnish employment to unskilled labor. The solution of the problem rests mainly with ourselves as master painters; so far as car and locomotive work is concerned, we must be the instructors. It will entail some additional labor, but it will repay each of us in the end, by giving us workmen trained under our own eyes, in our own methods and in sympathy with our mode of working, and while devoting some thought to their instruction we will advance in knowledge ourselves.

Details of Wootten Express Locomotive, Union Pacific Railway.

The accompanying engravings represent very fully all the boiler mountings and brass cocks and fountain used on the Wootten express locomotives, designed by Mr. Clement Hackney, and built by the Rogers Locomotive Works for the Union Pacific Railway last year.

A general view and description of this engine has previously appeared in these columns and many of the details have also been illustrated including the frames, driving wheels and axles, crank pins, connecting and coupling rods, slide-bars, cross-head and piston, etc.

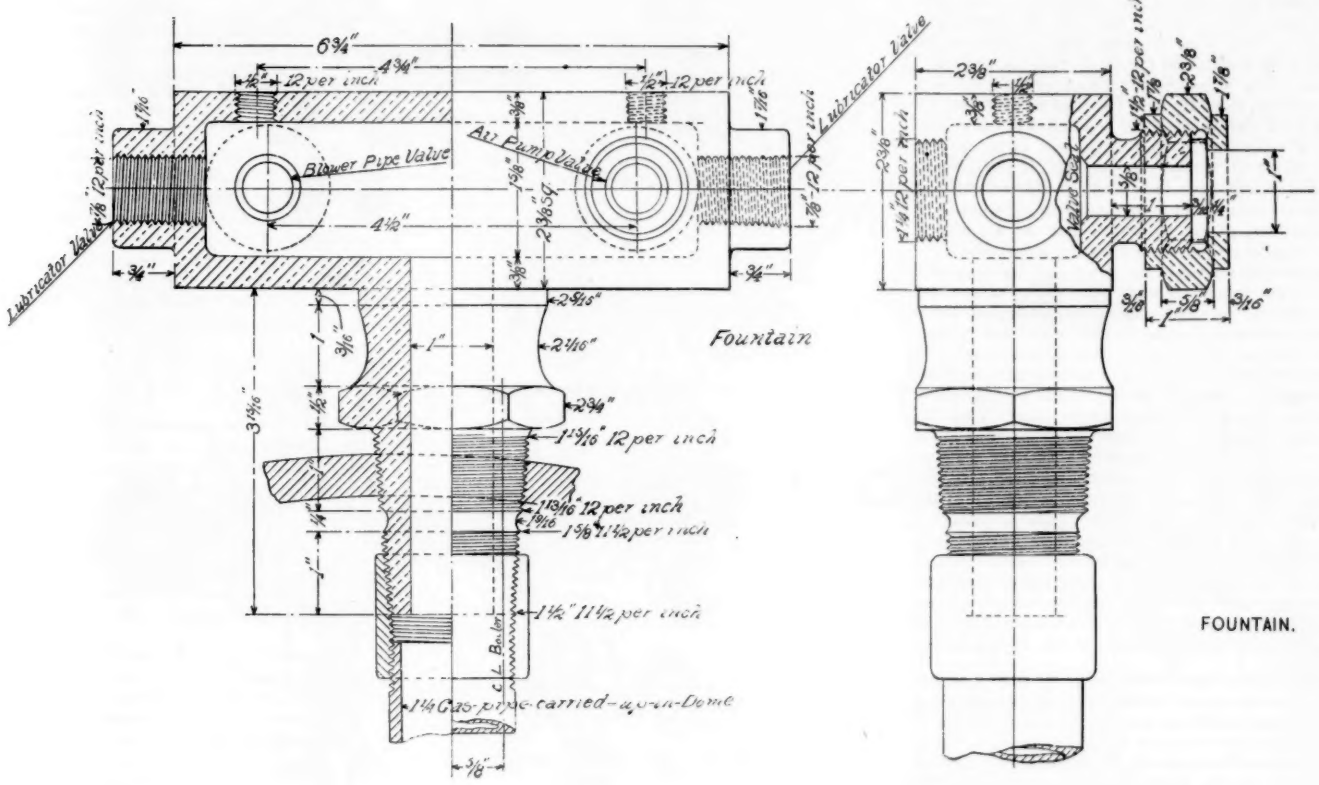
The details of the brass work and cocks are so clearly shown in the accompanying illustrations that little description is necessary.

The check valve is well adapted for use with bad feed water, the opening to the boiler being large and the disk enabling the valve to be rotated and forced down on the seat with steam on. This obviates any trouble from the valve sticking from dirt or grit getting on the seat.

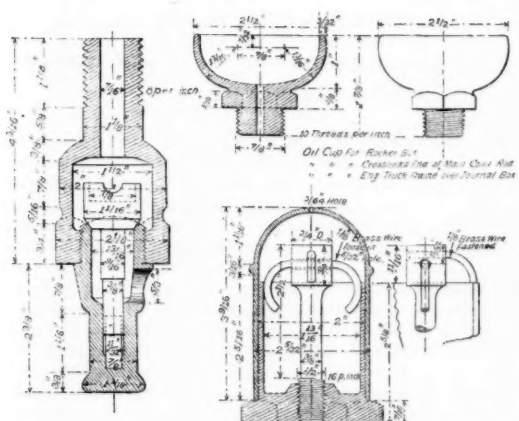
The connecting rod oil cup is on the principle of the needle lubricator, feeding only when the engine is in motion. The means of adjusting the feed of the guide oil cup is clearly shown.

The other brass cocks and mountings are good examples of careful attention to detail, but call for little remark.

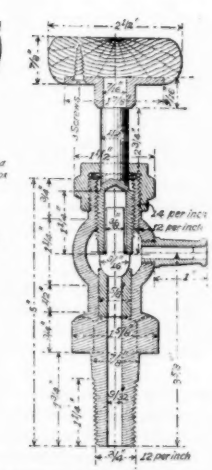
The brass cock and fountain are made of the following composition: 87.27 parts copper, 9.69 parts tin, 1.21 parts lead and 1.81 parts zinc. This is approximately 9 copper, 1 tin, 1/8 lead and 1/8 zinc.



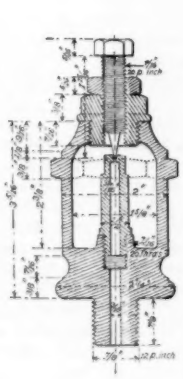
FOUNTAIN.



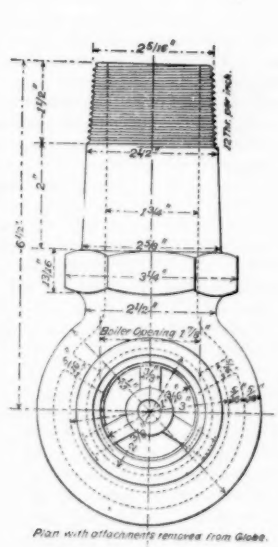
CYLINDER COCK

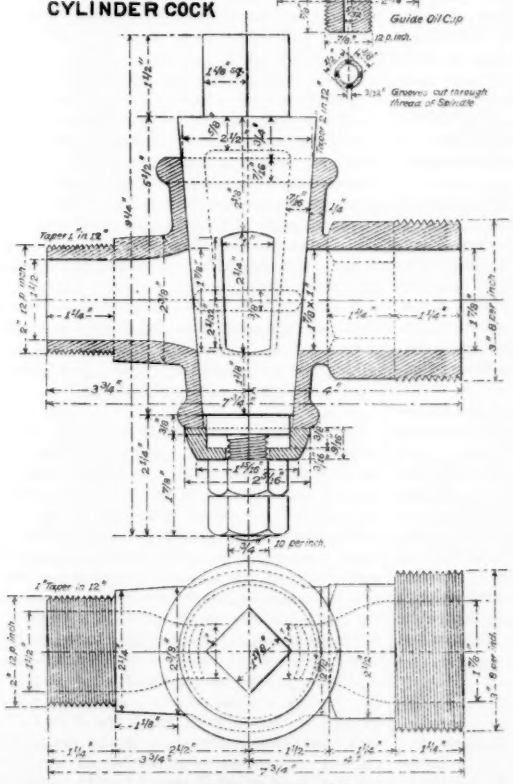


WATER GAUGE COCK

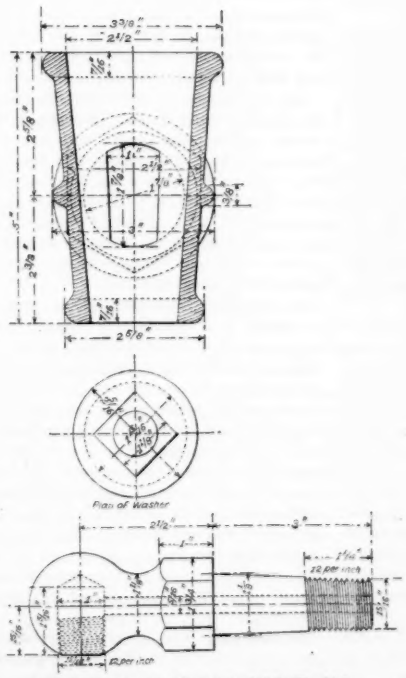


CONN. ROD OIL CUP

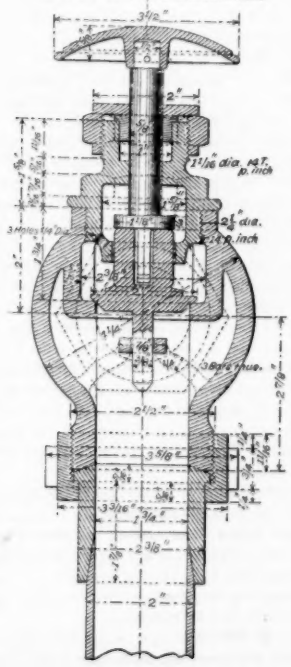




BLOW OFF COCK



WATER GAUGE GLASS PLUG



INJECTOR CHECK

DETAILS WOOTTEN EXPRESS LOCOMOTIVE—UNION PACIFIC RAILWAY.

The Care of Trestles.

The following paper was read at the recent St. Louis meeting of the Association of North American Railroad Superintendents, by Maj. C. S. Gadsden, Superintendent of the Charleston & Savannah, and President of the Association:

In the projection of railroads through certain portions of the United States, especially near the coast in the South Atlantic and Gulf states, where the population is sparse, and economy of construction a necessity, and owing to the abundant supply of timber, the crossings of the immense swamps and rivers have been made of different styles of trestles; which though filling the condition of economy in first cost, become, as the woodwork gets old, a source of anxiety to those in charge of the operating departments.

In these localities the rise of the water has not been very high, due to the wide water ways provided by nature, and so these trestles have been of simple construction, one tier in height, and conforming to what are known as either "piles to grade" or "inverted W" trestles. These structures in the localities with which the writer is most familiar have been and are being built of yellow, or pitch pine, the average life of which has been found to be about eight years. While this period of eight years may be correct as an average life of such timber, all familiar with wood as a building material know that from various causes some of the pieces give way much earlier than the time given as an average life; and that in spite of the closest inspection a certain percentage of worthless stuff will find its way into these works. It is no unusual experience to find these wooden trestles extending for miles through swamps of the most inaccessible character, where the difficulties of construction tend to encourage, or at least to make allowance for, the introduction of inferior material, and the insalubrity of the climate for inferior work.

The maintenance of these wooden ways becomes a serious charge upon the finances of a road, and, in the experience of the management, a continual menace to the safe conduct of traffic. They are the weak spots on the roadway, a source of untold anxiety to the superintendent, and current history proves that his anxieties have been somewhat justified by the results.

The superintendent's chief reliance must be upon frequent and thorough inspection. Independent of the daily visits of foremen of trestles, who in many cases never leave the long trestles from year to year, and the frequent but partial inspection of supervisors and road masters, there should be an officer—the Inspector of Bridges and Trestles—whose duties, properly defined and thoroughly executed, should be a complete check upon the conduct of the roadway department, while relieving it of no part of its responsibilities.

The code of instructions under which such an inspector should act must provide for an annual inspection, at such time as the management may decide as best suited for thorough work. Armed with axe, hatchet and auger and with such assistants as may be required, the inspector should personally scrutinize each individual member, and from his knowledge of the subject judge how much life remains to each stick of timber. He should classify the several members under their distinctive heads of piles, sills, posts, caps, stringers, etc., and assign to each a letter or number, which under his code of instructions shall at a glance indicate to his superior the condition of such pieces. Any members found in a dangerous condition must be removed at once under the eye of the inspector, while those members having a minimum life of three (?) months must be particularly designated.

Proper inspection of lower members of such structures can only be made from the surface of the ground, and from this standpoint of observation many defects in caps and stringers, their connection, etc., will be discovered, which would not be observed from above. No matter, therefore, how uninviting may be the swamps and morasses traversed, the duty of the inspector to go below must be imperative.

His instructions should not confine him merely to the inspection and record of the conditions of the materials, but should embrace the obligation to report upon the condition of joints, mortise and tennon fits and pins through the latter; whether any settlements have occurred in the foundations, and if so, what shims have been used and their condition, and upon the number, condition, location and size of braces, particularly of longitudinal braces. Inattention to the mortising of the trestle frames upon the pile heads and supplying a full number of pins, with carelessness in keeping up the proper system of longitudinal bracing, has at times resulted in long stretches of trestle work going down like a card house. The importance of insisting upon due attention to these minor features cannot by too rigidly inculcated.

The inspector having finished his work, a report of it must be made at once to his superintendent, who will direct the road master to have removed within the space of time indicated in this report those sticks of timber whose life will be exhausted during the current year. As each such return is made from the road master it should be verified by the inspector, and a final report be forwarded to the general manager.

As a further measure of protection of these trestles against the results of derailment and failures of machinery on passing trains, the heavy floor system has been introduced with provision for a second rail inside, and a heavy timber outside the rail. Latimer bridge guards have also been adopted as a means of rerailing any wheels which may approach the trestle derailed from any cause.

General Order 188, making rules for the government of the inspector, and the form No. 54 in use on the Plant system in South Carolina, Georgia and Florida, are given below.

Under provisions of General Order No. 188, paragraph 4, it is ordered that the condition [of timber] will be recorded as follows.

D. Dangerous, must be removed at once, under direct supervision of inspector.
*3. Must be removed in three months.
*6. Must be removed in six months.
*9. Must be removed in nine months.
1. Must be removed in one year.
8. Safe for more than one year.

In the hands of an experienced timber inspector, these conditions can be assigned to the several members of these structures without imposing too heavy a cost upon the company, whereas timidity or inexperience may occasion serious loss.

Paragraph 9 provides for premium for bridge foremen. At the end of each three months the bridge foreman on each road who shall have put his timber in at least cost per thousand feet, board measure, will be rewarded with a premium of $15, at the same time a premium of $10 will be given the bridge foreman who shall have made the next best showing. The conditions of these premiums are as follows: A. Only actual time devoted to bridge work will be considered, and fifteen minutes will be allowed for each train passing during working hours. B. All timber put in will be considered. C. The work done must be strictly workmanlike, and in accordance with the standard plans.

The instructions on form No. 54 prescribe the order of examination, thus: Number of bents, piles, sills, legs, caps, corbels, chords, posts, braces, stringers, floor-beams, condition of cross-ties. Do piles in this bridge or trestle settle? If so, state condition of shims, number of feet of standard guard timber, condition. Is opening subject to wash at end, or at bottom? Total length of bridge. Longitudinal braces over every bent, size, condition. Are abutments protected by rock, revetment timbers, or any other protection? Condition of such protection.

The following certificate is given by the inspector: I hereby certify that I have this day, 188 , examined this bridge and find it in every respect as indicated above.

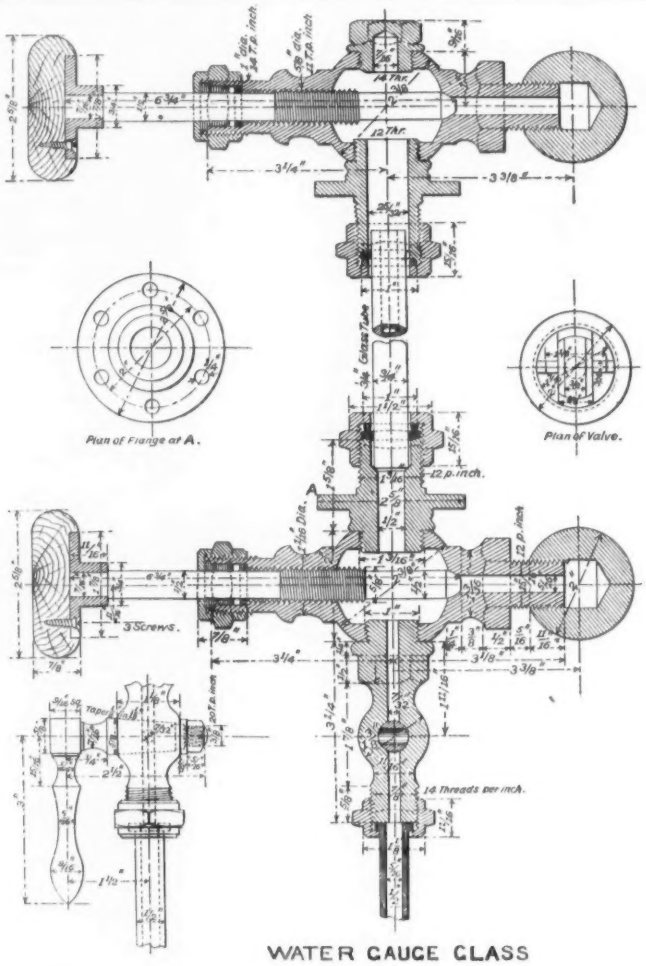
The united wisdom of railroad management is being invoked in the interest of a progressive civilization. Nothing new or peculiar is claimed for this method of inspection of wooden trestles, but the subject has been introduced by the writer to attract attention to one of the sources of railroad calamities. The hope is expressed that this may be a means of working up to uniform methods, and to improved styles of construction and maintenance. It is only by making public our several ways of treatment that we invite criticism and rise to better things.

Examination of Trainmen.

The necessity of a system of questioning trainmen, and other employés who are directly responsible for the safety of passengers and of trains, concerning their knowledge of their duties, is coming to be recognized more and more. The adoption of changes in the running rules at once brings this question plainly to the front, and the asking of a few questions in any line almost invariably shows the need of further investigation of the knowledge and habits of the person examined. The same need is discovered (in other ways) by roads which have not adopted the uniform code and have made no general change in rules, and from various causes the "schoolmaster" idea is surely gaining ground. But the consideration given it thus far may be said to be generally of a quite desultory character. Only a very few roads have provided anything like a systematic arrangement for this department, which is really important and may be said to bear the same relation to the code of rules that the register's office does to a deed. The superintendent who gives his trainmen instructions of the most serious import and takes no measures to "bind the bargain" by getting the trainmen themselves to take some visible action, may be likened to the New Yorkers who have recently accepted $400,000 worth of deeds without making sure that they were recorded.

Those roads which have tested their men have pursued somewhat various methods. Some superintendents have deemed it necessary to have a printed code of questions, while others prefer to leave the kind and number of questions, length of time spent in examining, etc., to the examiner's judgment in each individual case. We, therefore, print below some extracts from a letter written by the manager of a road which has taken quite extensive action in this method of improving its personnel. This road deems it necessary to have a printed code similar to that used on the Fall Brook Coal Co.'s roads, referred to in these columns some months since. While this road is a large one its experience has not perhaps extended over a sufficient length of time or been studied with sufficient care to make it infallible as a guide; but the account gives many interesting points, and is well worthy of attention.

" * * Before the adoption by this company of the uniform rules they were carefully considered by a committee composed of officers of our Transportation Department, from whose deliberations resulted the formulation of a code of questions by our Superintendent for the use of the examiner in making examinations, which, in addition to the questions, contained notes of reference and suggestions for the use of the examiner in making clear any points about which a misunderstanding on the part of the men might arise. This list of questions we found in practice to be of great service to the examiner, in that it resulted in the saving of time and insured against the omission of examination on important points; for it must be conceded that, no matter how familiar the examiner may be with the subject, it would be impossible for him to call to mind every one of the two or three hundred vital points in the course of an examination; and where there are any considerable number of men to be examined, and time is an object, I should hardly regard as perfect an examination conducted without the examiner having some sort of data, in addition to the book of rules, to enable him to put questions readily and concisely. I do not say that



WATER GAUGE GLASS

DETAILS WOOTTEN EXPRESS LOCOMOTIVE, UNION PACIFIC RAILWAY.

(For description, see page 650.)

perfect examinations cannot be had without such notes as I refer to, but much time is saved by their use, and the examinations rendered more perfect. For the ordinary examination of employés for promotion, or of new men entering the service, I would scarcely deem such a list of questions as I have described necessary, but in the case of introducing a complete set of new rules, where hundreds of employés have to be examined, I consider a carefully selected code of questions for prompting the examiner economy, as well as a safeguard against imperfect examinations.

We found it expedient to examine our men in classes of six or seven persons, our experience teaching us that more than that number could not be satisfactorily handled; and any man showing weakness was given a separate examination. The examinations were conducted by the trainmasters on their respective divisions, and, whenever possible, the superintendents assisted. The average time consumed in examining a class was from two and a half to three hours. We found it necessary to examine quite a number of the men a second time, and a few a third.

Since the introduction of the rules examinations have been made individually, which consumes from one to two hours for each examination, according to the ability of the person examined to frame his replies intelligently. Inability in this respect we found to be a great drawback with many of our men, necessitating much questioning to obtain a clear understanding of their replies. This demonstrated the importance of the examiner framing his questions in the simplest language possible to avoid confusing the person examined. We found it more expedient to examine by illustration than by direct questioning, *i. e.*, instead of asking how a certain rule should be carried out the examiner would suppose a case, and have the examined apply the rule, under the conditions set forth by the examiner.

We had little or no difficulty in making the new code of rules clear to our men. In one or two instances (notably Rules 21, 86, Form E of the telegraphic orders, and Rule 108), where an old established practice was changed, modified or reversed by the new code, fuller explanations were sometimes necessary. Under Rule 21 the time-table shows the *actual meeting or passing time* of all trains of whatever class; under Rule No. 86 the train of inferior class must be in the siding and clear the train of superior class five minutes. To the minds of some of our conductors and enginemen these two rules seemed to conflict with one another, it having been our practice, prior to the adoption of the new code, to show in heavy type at meeting points the time of the inferior class train as many minutes earlier than the time of the superior class train as our rules required (which was ten minutes), thus:

First class. No. 1.	Stations.	Third class. No. 74.
9:00	Lve.....A ..... Arr.	9:20
9:10	.. ..B...	**9:00**
10:00	Arr .....C..... ..Lve.	8:00

While under the new code the *actual* meeting or passing time is shown, the difficulty being to impress upon them the difference between the *arriving* time and the *meeting* or *passing* time, thus: Under the new code at meeting or passing points, while the figures in heavy type may indicate the actual arriving time of the train of superior class, the *arriving* time of the inferior class train is fixed by Rule 86 not less than five minutes earlier than the *meeting* or *passing* time, which may or may not be shown upon the time-table.

Rule 108, which provides that a train overtaking another train of the same or superior class disabled so that it cannot move, will run around it, assuming the rights and taking the orders of the disabled train, required some explanation also. The question with our conductors and enginemen being, "will more than one train be permitted to pass around the disabled train; and, if so, are the succeeding trains to run on their own orders, or shall they assume the orders of the train which last passed around the disabled train?" Some of our conductors and enginemen were also a little uncertain of their understanding of Form H of the telegraphic orders, which, in consequence, required more lucid explanation than was ordinarily necessary.

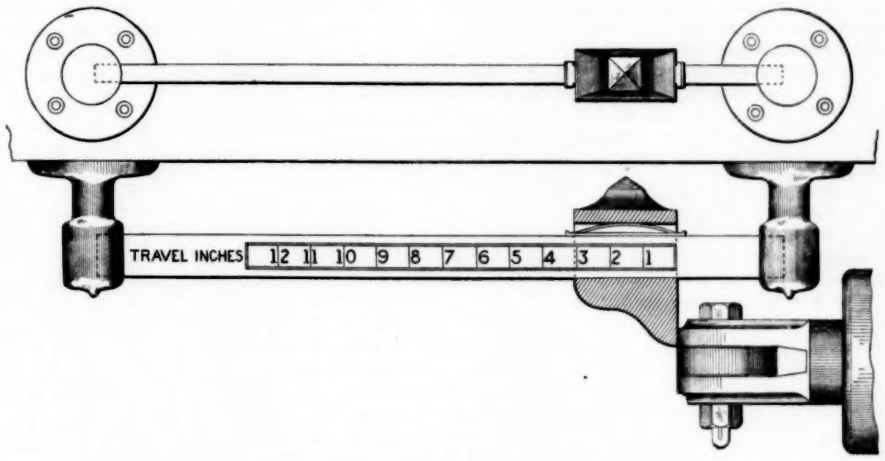
I deem it important to have some designated person conduct the examinations within a prescribed district, as it is quite obvious that a person who has conducted a number of examinations would be in a better position to know the weak points of the men than one who is a novice at the business. One who is accustomed to the making of examinations necessarily gains a great deal of valuable knowledge and experience on the subject, useful in conducting them, and is therefore more competent to make examinations than one who has never performed such work; hence I say it is economy to have regular examiners on each division to make all examinations. The experience of our examiners showed that a great deal of "coaching" had been done, and wherever this was found to be the case, more careful questioning was made, to make sure that the replies given by the person examined were based on *his* understanding of the rules, and not on that of some one else.

Too much stress cannot be laid upon the importance of the examiner putting his questions clearly, and in a manner that will not confuse or frustrate the men. He must be patient, and have the power to express himself clearly and forcibly. These requisites, combined with a thorough practical knowledge of the rules, are absolutely necessary to the making of successful and perfect examinations, as much for the benefit of the road as of the men to be examined.

Potts' Air Brake Travel Register.

The accompanying illustration represents a very neat and simple little apparatus devised by Mr. Robert Potts, Foreman of Car Repairs at St. Thomas, Ont., on the Canada Southern division of the Michigan Central.

It will be seen that it consists of a head, sliding with some friction along a bar marked in inches with the stroke of the air-brake piston. This bar is attached to the under side of the car sills, so that when the brake piston is home and the brake completely released, the sliding head or indicator touches the air-brake cross-head and at the same time stands



POTTS' AIR BRAKE TRAVEL REGISTER.

at zero on the scale. It is shown in this position on the illustration.

It is evident that when the brake is applied the cross-head will push the sliding head forward, and that the travel of the latter will correctly indicate the stroke of the piston. When the brake is released the piston and cross-head move back, leaving the indicator still showing the travel. The spring shown in the sliding head prevents it moving with the oscillation of the car, but permits it to move when pushed by the cross-head. The cross-head can thus only move the sliding head forward and, therefore, the latter always indicates the maximum distance which the piston has traveled. This is a very great practical convenience to car repairers and brake examiners, for a glance at the indicator shows whether the slack of the shoes needs being taken up. The inconvenience of the present method is well known to practical men. The distance between the shoes and wheels must be either guessed at or measured, both very unsatisfactory means of ascertaining the actual travel. A more certain method is to apply the brakes and measure the travel, but when a train is standing at stations, the locomotive is often detached, and the application and release of the brakes on each car takes time and necessitates signaling or shouting between the examiner and the engineer.

Much of the inefficiency of brakes is due to the fact that the travel is too long, the piston striking against the cylinder head, and the air therefore wasting some of its pressure. On the other hand, many cases of brakes failing to release promptly are owing to the travel being too short, the brakes being taken too close, with the consequence that, owing to the small amount of expansion, the pressure in the cylinders is but slightly below that in the train pipe. Hence the difference of pressure is insufficient to operate the triple valve. This device should obviate any difficulty on this score, and should show the examiner at a glance whether the slack needs taking up, and, if so, how much.

This device will probably be specially useful on stock and freight trains equipped with the air brake, as the time saved on each of 20 or 30 cars will be an item of considerable importance.

The indicator has been applied to several passenger cars on the Canada Southern.

The Superintendents' Association.

THE NEED OF MORE INSPECTION IN RAILROAD WORK.

At the late meeting of the Superintendents' Association at St. Louis, Capt. R. G. Fleming, of the Savannah, Florida & Western, presented a paper containing pertinent suggestions relative to a system of inspection which ought to be instituted on all roads. Prefacing his remarks with a statement of the value of rigid inspection made by competent men in all departments, and alluding to the certainty with which such scrutiny always improves the character of the work done, the author goes on to make some detailed suggestions regarding the different departments. As an instance of the great inconvenience frequently resulting from a small lack of inspection, Capt. Fleming mentions the case of 20 engines tied up in a roundhouse by a breakage of a turn-table, which would have been readily detected under a proper system of periodical inspection. The road, road-bed, bridges, trestles and other buildings should not only be carefully inspected by a high officer monthly, but should be made the subject of a regular monthly written report.

The general lack of proper classified information at headquarters concerning the condition of rolling stock and machinery is adverted to. There should be an inspector of train service, who would see that trainmen understand their duties, that cars are in proper condition, that the comfort of passengers is provided for, etc. Traffic department inspectors should not merely inspect station agents' accounts, but should give careful instruction in all the duties of an agent, see that the details of his clerical work are done according to the prescribed system, and post him as to the manner in which he should represent the road with its patrons.

It will be asked why the heads of departments cannot perform this service. To a certain extent they can, and do, but their other duties demand so much attention that no system of inspection can be made satisfactory unless its importance is more fully recognized. Our profession is reputed a progressive one, but the demands of the public for safety, comfort and speed are constantly growing, and we must be on the alert if we are to keep abreast of the times. The Superintendents' Association should take some action on this important subject. The best roads have already made more or less advance in the matter, but it is to the true interest of all roads to organize a similar system, as they would certainly realize better results than at present. Perhaps the most important consideration in connection with this subject is the necessity that inspection should always be done in conformity to a high standard, and by the most intelligent men; those who are competent and thoroughly educated, and who can make clear and forcible reports.

REPORT OF ROADWAY COMMITTEE.

Mr. J. B. Morford, of the Michigan Central, Chairman of the Roadway Committee of the Superintendents' Association, made a brief report stating that no special business had been referred to the Committee by the Association. He refers to the large amount of material in the Report of the Committee on Roadway, of last year, as rendered at the New York meeting in April, but finds that the practice, as shown by that report, is so extremely varied that deductions of value are hard to make.

The variety of rails and fastenings in use is so great that the recommendation is made that the Association adopt a standard rail section for 50, 60, 70, 80, 90, and 100 lbs. per yard, a committee to be appointed to gather information and opinions and, perhaps, offer prizes for papers on the subject. In ties and ballast, switches, frogs and guard-rails, the practice is characterized by an equally bewildering variety. The association should adopt a standard switch and stand, a standard frog—rigid and spring—and a standard method of guard-railing, both for frogs and for bridge systems. On methods of track-repairing and inspection and on cost of superstructure, maintenance and construction, but little information can be derived from last year's report. Nevertheless, it is undoubtedly true that much quiet and faithful work has been done under these heads—more than has been properly appreciated or given credit for—and this Association should offer a prize, say, of $50, open to any railroad man for the best essay on track work, the proper care of roadway and the most approved methods of building the superstructure of a railroad, accompanied by reliable estimates of cost, drawn from actual experience.

President Gadsden's paper on the Care of Trestles will be found in another column.

Tripp's Anti-friction Roller Bearing.

The Tripp anti-friction journal has been in constant use on one of the Boston West End street cars for a year, and was examined recently. As it had not been oiled or removed since it was attached its condition was anticipated with interest, and it was found to be perfect. A few parts were slightly worn, but in most not at all, and it is stated that the results were so satisfactory that the company is equipping cars on all the lines with it.

Twenty-two small steel rollers are run on pins extending on either side of a central frame and on which they are free to roll. Their inner surfaces bear on a gun metal sleeve that is fixed to the axle and their outer surfaces on a steel collar in the journal box. The frame is free to revolve, so that in practice each roller is kept even and true. Lateral wear is taken up by suitable washers and the bearing is made dust proof by an ingenious device. The bearing and its box are a trifle larger than the ordinary ones, but necessitate no change in the running gear. The chief advantage of this over other roller bearings is in the ingenious arrangement for keeping the rollers parallel to the axle and thus preventing uneven wear and undue friction. A car on the New York & New England is now being fitted with this bearing.

RAILROAD GAZETTE

Published Every Friday,

At 73 Broadway, New York.

EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

Judge Cooley has written letters to Mr. Blanchard and to Mr. Midgeley, urging upon their respective associations the importance of adopting a uniform classification of freight for the country. He seems to fear that a law will be passed making such uniformity compulsory, and urges that the railroads will be much better off if they adopt it themselves when their hands are somewhat free, than if they do it under the pressure of a stringent law. There is much force in what he says. It is true that it is hard to agree upon a compromise classification amid the conflicting claims of different sections, but much more can be done and ought to be done than has been accomplished in the past. Variations in classification cause shippers who are affected by them an amount of vexation quite out of proportion to any benefit which they render to the railroads. It is one of those matters where a moderate amount of work by a conference committee, however unsatisfactory in its immediate results, will yet, in the long run, save a great deal of irritation and perhaps act as a protection to the roads against the attacks of popular agitators. Whether uniform classification really does the public much good is a doubtful matter. The wider the field over which it is extended, the more difficult it is to effect transfers from a higher class to a lower. In this way the system may often prevent desirable reductions in rates at points where they are most needed. But we believe that its value in saving friction outweighs any incidental disadvantages of this kind, and that it will be worth while for the railroads to try to follow Judge Cooley's advice, even at the cost of much trouble in making the arrangements.

Reports from the International Wheat Congress at Vienna leave no room to doubt that there will be demand enough for American wheat, even at the higher prices now ruling. The advance is much of it the result of deeper causes than manipulation. It is not confined to Chicago and New York. The prices quoted at the close of August in 1887–1888 in the markets of central Europe were as follows:

	Paris.	Vienna.	Berlin.
1887	Fr. 21.60	Fl. 7.15	Rm. 148.50
1888	27.60	8.41	179.00

The shortage is most conspicuous in France, where the crop has fallen from 315,000,000 bushels in 1887 to 255,000,000 in the current year. Great Britain has suffered an even larger proportionate loss (from 79,000,000 in 1887 to 57,000,000 in 1888), but the absolute difference is much less. Italy also shows a decided reduction, while Germany and Austria do not quite hold their own. Of the wheat-exporting countries, Russia shows a distinct increase from 232,000,000 bushels in 1887 to 255,000,000 in 1888. The Balkan countries simply hold their own. India shows a falling off even from the disappointing crop of the year before, while the shipments from South America and Australia, though probably somewhat increased, are too trifling to have much effect in the world's markets. The aggregate crops of all countries are estimated at 1,832,000,000 bushels in 1888, against 1,977,000,000 in 1887. The increase in Russia, such as it is, will be needed to make up for the deficiency in Germany and Italy, leaving France and England dependent to a great extent upon additional supplies of American wheat. If they would only take corn instead of wheat we should have a brilliant prospect; as it is, we are in no condition to respond to any exceptional drain. For this reason it is open to some question how far our trunk lines will profit by the change. If the quantity to be moved is at all short, higher prices may not necessarily mean higher rates, especially with the somewhat strained relations now existing between competing routes to the seaboard. Higher prices, as we pointed out a short time ago, mean that higher rates are possible; they do not show with certainty that higher rates will actually follow.

All classes of railroad men should read our column of "Railroad Law," not only for the law it contains on all conceivable phrases of the business, but as well for the instances it occasionally affords of principles which ought to be combated. If there is any imaginable phase of any railroad servant's or officer's duty that has not been made the subject of a legal inquiry and decision it can fairly be counted a curiosity. No claim is so frivolous that patron or abutter cannot be found to fight for it, and none so just that some road will not resist it. Station agents will find in this week's notes a case whose settlement they will not all agree to, and another which illustrates the difference between accepting a car and accepting the goods within it. Travelers will regard as unjust a decision which virtually blames certain passengers for being scared at an apparently imminent collision. Courts generally look with leniency on the suits of people who get hurt in an ordinarily clear-headed attempt to avoid danger. Perhaps, though, the litigants in this case were injudicious in the assignment of their reason for vacating the car. They should have got fully scared at the snow plow without regard to the whistle.

One of the duties of a fireman on a locomotive is to keep a lookout for danger ahead. The fact that the most perfect engineer, he whose body is in the highest state of health, whose nerves are never overtaxed, and whose brain is always clear, will yet sometimes lapse, is universally recognized, and the idea of sending out an engine with only one man upon it would be generally disapproved, even if the labor of firing were reduced, as in petroleum burning, to nothing. The locomotive runner who never got into trouble by failure to observe a danger signal must doubtless attribute a portion of his immunity to good fortune, for those who can honestly say that they never passed a switch target or danger signal without looking at it would be as hard to find as white blackbirds. But while the principle of having the fireman act as auxiliary pilot is readily agreed to, the practice—the method of carrying out the principle—is exceedingly loose. The fireman is either left with no definite instructions whatever, or is merely directed to watch out when he is not otherwise engaged. As a consequence, any fireman who knows enough to lie can escape the consequences of the most flagrant heedlessness by simply testifying at the investigation that he was throwing coal at the moment of the engineer's oversight. The code of the Boston & Albany is the only one we now recall that has any provision against this weak point.

The British Board of Trade inspectors, whose investigations into train accidents afford some of the most instructive reading for trainmen and their superiors that is anywhere published, had occasion during the last quarter year, as will be seen by the account printed in another column, to censure three firemen for important contributory negligence in cases of collision; and in a fourth case, the fireman, although he was not blamed, can see that he might have averted or mitigated an ugly and costly accident if he had been looking ahead. On the Elevated in New York City a few days ago, a car or two of a passenger train narrowly escaped tumbling into the street—in fact, one truck did fall, striking directly on the horse-railroad track below—because a switch light showing red was not obeyed. A train load of passengers were greatly frightened, a score or two of reporters badly excited, and a city-full of people mildly stirred, by the lack of a good lookout on the engine. That the British inspectors' point is well taken, can hardly be doubted. The Boston & Albany's rule that firemen must see every fixed signal, and tell the engineer whether it is right or wrong (unless the latter speaks first) should be generally adopted and used, at least until extended experience shall show it to have some weakness. The fireman's work is hard, especially upon large engines burning soft coal, and new restrictions which impose more thought and care upon him will generally be received with anything but pleasant feelings. But a rule which, like this, is really to his own personal benefit will appeal to any intelligent fireman's reason, and the road foreman should be instructed to not only issue the rule, but to accompany it with conciliatory admonitions. Friendly talk should not be reserved for committees of exasperated strikers.

The objection to this rule that dividing responsibility will tempt the runner to relax the rein with which he governs himself may have some weight, but the same argument applies as between the conductor and engineer. Accidents and potential accidents are frequently occurring from neglect of duty by a conductor who depends upon the fidelity of the engineer, or vice versa. Inspection which will detect derelictions of this kind is not easy to maintain, but it should not be given up as impossible, by any means. There is need enough of it in the present evils just alluded to, and if it can be made to correct those it can be tried as a means of discipline of firemen.

It would be extravagant to say that civilization has marched over the face of this continent on the legs of a timber trestle. But it is quite within bounds to say that those useful members have greatly facilitated her progress; and, unfortunately, she cannot yet get along without them. Wooden trestles must be extensively used, for years to come, but as Major Gadsden says in a paper printed in another column, their maintenance is a serious charge on the finances of the companies, and they are the source of untold anxiety to operating officers. With a view to getting discussion on this important subject, and to promoting better and uniform practice in construction and maintenance, Major Gadsden laid before the Superintendents' Association his own views and the system of inspection in use on the "Plant" lines. The system is well designed to secure proper inspection and repairs. Like any other system, however, it is not automatic, and can only be made efficient by the vigilance of the superior officers. The plan provides for examination of wooden bridges and trestles by foremen daily, by roadmasters frequently, and by the Inspector of Bridges annually. The rules of the New York, Lake Erie & Western, published in the *Railroad Gazette*, July 29, 1887, require a close inspection *twice* a year, of all wooden bridges and trestles which have been in use over three years. This inspection involves boring holes in all suspicious looking places, to ascertain the exact condition of the timber. By the Erie system monthly examinations are made by inspectors, who have no other duties, quarterly examinations are made by the division roadmasters, and a stated examination of all bridges is made twice a year by the engineer of bridges and buildings. The quarterly reports of the division road masters are forwarded through the offices of the division superintendents, general roadmaster and general superintendent, and all of these officers have to sign the reports. It will be seen that the system not only provides for frequent inspection, but that provision is made to constantly inform each responsible officer of the condition of the structures in his jurisdiction, and to keep a complete chain of responsibility. The effort to designate the remaining life of different pieces of timber by periods of three months seems an unnecessary and impracticable refinement in the system of reporting on the Plant roads. A judicious inspector would probably keep on the safe side, but a rash one would be tempted to leave a stick in three months which really ought to be taken out at once.

It is much to be regretted that the question of a uniform coupling for continuous steam heating has not been decided ere this. The want of uniformity will do much to retard the settlement of a question that in other respects is progressing in a very satisfactory manner. The idea of asking the New York state Railroad Commissioners to decide upon a coupling is, to say the least, unfortunate. The choice of a coupling should mainly depend upon mechanical fitness, and the proper judges of the mechanical merits of any railroad appliance are the mechanical officers of a railroad, who have not only knowledge and experience, but have facilities for conducting tests on a large and practical scale under the varying conditions of actual service. The Commissioners have simply to see that the law is carried out, and cannot be expected to assist or supplement railroad officers in the performance of their duties. Furthermore, the adoption of a certain coupler in one state would certainly be followed by the adoption

of totally different couplers in other states. The history of state legislation concerning car couplers surely does not need to be repeated as regards continuous heating couplers. The question should be decided by the mechanical officers of the railroads acting in concert, each man resolving to vote for that he thinks best mechanically, and ready, if beaten, to accept what the majority consider the best coupling. In this way alone can the advantages of continuous heating be fully and universally realized. As long as there is a doubt as to the coupling, railroad directors will hesitate to order heating apparatus, and the stove will continue to be the rule, and continuous heating the exception.

The diagram on another page of the speed attained on different portions of the road by one of the Scotch expresses on the Caledonian line is an interesting example of what can be accomplished, even on long and heavy grades, by an engine with a very moderate amount of adhesion weight. The trains are certainly not lighter than many of our limited trains, though our heavy express trains, which average about 700,000 lbs., are just 50 per cent. heavier than the Scotch train. If the same proportion of adhesion weight were sufficient, 38,080 lbs. + 19,040 lbs., or 57,120 lbs. adhesion weight should be sufficient to run one of our heavy express trains over bad grades at an average speed of from 44 to 52 miles per hour, or say fully 40 miles per hour, including stoppages. This performance should be sufficient to show that a moderate amount of adhesion weight is sufficient for high speeds, especially when it is borne in mind that in these runs of the Scotch expresses, there was still a margin of power to spare. The arrivals at every stop were almost without exception ahead of time, and on one occasion orders were given to run from London to Edinburgh within 7¼ hours and the train performed the journey in 7 hours 38 minutes, or 7 minutes in advance of the accelerated schedule. This and the fact that other fast expresses in England are run with very great punctuality appear to show that the enormous and possibly dangerous adhesion weights used in some recent express engines here are unnecessary and that a limit of, say, 65,000 lbs. on four drivers is sufficient on lines having ordinary grades, say not exceeding 60 ft. per mile.

The Practical Limit of Speed.

The highest speed practically attainable in daily service with passenger trains has always been a point on which much discussion has been raised. The recent race between London and Edinburgh seems, however, to afford a tolerably complete solution of the problem. The official figures, giving the actual time and load for each day of the run, when analyzed give the following average results for the London & Northwestern route from Aug. 6 to Aug. 31 inclusive. During this time the schedule time was 8 hours for the 400 miles and the train arrived in Edinburgh ahead of schedule time on 22 days and was 37 minutes late on one day only, owing to a flue on the locomotive collapsing. With this exception, the running was remarkably regular, the trains arriving within 1 minute for 11 days in succession. The average speed for the whole period was a fraction over 50 miles per hour including stops, and slightly under 55 miles per hour excluding stops. The average time occupied in the three stops was 40 minutes, one stop being for dinner. The train consisted of four eight-wheel cars, with F. W. Webb's radiating axles. The cars were each 42 ft. long over bodies, and weighed 42,500 lbs. each. Three different classes of engines, weighing respectively 61,000, 76,000 and 94,000 lbs. in working order, were employed on different portions of the route, the lightest engine running over the lightest grades. The minimum weight of engine, tender and train was 287,000 lbs. and the maximum 339,000 lbs., the average being 305,000 lbs. The grades varied considerably, the worst being one 9½ miles long averaging 67 ft. per mile and another 4¼ miles long of 70 ft. per mile. The best performance over the section containing the former grade was 101 miles in 104 minutes (which was done on three occasions), and over the latter 90 miles in 90 minutes, in both cases from start to stop. The fastest run over the more level portion was 158 miles in 166 minutes, start to stop, or 14 minutes under schedule time.

The feat appears to have been so easily performed that on the Northwestern it was not considered necessary to employ the compound engines, and the fast running was done with comparatively old engines of far less weight and power than the compounds, which were reserved for the heavier trains. These facts merely emphasize what has repeatedly been urged in these columns, the importance of good signals, which aid fast running far more effectually than heavy engines.

It will thus be seen that with a light train, stoppages averaging 100 miles apart, good permanent way and somewhat severe grades on the northern portion of the journey, a speed of 50 miles per hour, including stops, was maintained with ease. This certainly marks a considerable advance on previous practice, and shows that where sufficient inducement offers, modern railroad appliances are capable of approaching very closely to the apparent limit of a mile a minute.

The Time Convention.

The fall meeting of the General Time Convention in New York City comes next Wednesday. The place of meeting is the Hoffman House, Twenty-fifth street and Broadway, a few doors west of the place where the meetings have been held for the past few years. The committee on car mileage and per diem rates, and that on train rules, will present reports, and there will also be reports from other committees. The train-rule committee of course has ample material for a report of any desired length, for the uniform code has been taken up, criticised, altered and adopted by a great many roads since the last meeting. As has been shown in these columns, these roads have introduced into the code many amendments of more or less merit and originality which are worthy of the attention of the convention. The experience of progressive managers in adapting the code to their individual roads as well as in cognate matters which have been brought prominently to notice for the first time by this change, cannot fail to be valuable to the whole body, and should be drawn out. We print in this issue some notes from a prominent manager which are suggestive in this connection. The collation and presentation of the facts available would, however, be a large task and a burden on the committee, which has already laid the convention under obligations.

But the most interesting, and doubtless the most important business before the meeting will be the consideration of the report of the Car Service Committee, recommending the adoption of the combined mileage and per diem system, which has lain on the table since April, action having been postponed then because many roads had not sufficient information to intelligently vote on the question. The Committee is expected to present statistics showing the results obtained by the thirty odd roads from operating under the system for some months during the present year. The Per Diem Committee of the Car Accountants' Association will also present statistics showing the performance and earnings per car per day of the cars owned and controlled by a large number of roads, which will be compared with the earnings at ½c. per mile and 15c. per day, and with a straight per diem charge of 25c., the object being to show just what the performance of cars is at the present time generally throughout the country, and to what extent car hire would be increased by the adoption of either the combined plan at ½c. per mile and 15c. per day, or of straight per diem at 25c. There is nothing on the surface to indicate that the Time Convention Committee will be able to show any considerable increase in the performance of cars on the respective per diem roads, and the Car Accountants' Committee will probably show a considerable increase in the cost of car service under either of the proposed rates as compared with the ¾c. per mile basis. Under these conditions the committee will probably have a hard struggle to carry through the adoption of their recommendation. The opposition, who will generally be found to be the car borrowers, will at once point out the fact that there is no evidence that the new system has or will increase the efficiency of the cars, and will protest most earnestly against being called upon to pay a higher rate for car service, particularly at a time when the rate for all other classes of service are tending downward. We should not be surprised to find that the statistics now being collected by the car accountants showed the earnings of cars away from home under the ¾ cent rate to be less than 20 cents per day. This, no one will dispute, is too little. But as the borrowing roads decline to pay a higher rate the problem before the convention is a knotty one. United action on the part of a very large majority of the roads (reckoned by their car-ownership) is necessary; and intelligent action of this sort probably cannot be had until after much painstaking missionary work on the part of those who believe in the proposed change.

But whether "per diem" makes progress or not, the scarcity of cars, which is the immediate disease that the proposed reform would be expected to cure, is upon us. From New York and Illinois, Michigan and Alabama, Ohio, Colorado and California the cry is the same A considerable part of the demand is for coal cars or other kinds which, however plenty in the regions now suffering, would give little help to general traffic. The facts are plain. The service of cars at home is in crying need of improvement, whether the profit from cars lent increases or diminishes. The average freight haul is given by Poor's Manual as 108 miles. As cars have to perform some journeys empty it is probably safe to call the average freight car journey, adding its empty mileage to its last loaded trip, 125 miles at least. At ten miles an hour this would take 12½ hours; but as investigation has shown that favorably situated roads get only about 25 miles a day out of their cars we must conclude that five days (of 24 hours each), instead of one-half of such a day, is the average time actually consumed. The 107½ hours not spent on the road must be the time occupied in loading or unloading, necessarily or otherwise. This being the average, and including only cars in service, it is plain that after deducting the considerable percentage of cars that are promptly loaded and unloaded under present customs, the delinquent cars, those whose shippers and consignees must be attacked, will show an average detention of probably 100 per cent. above the legitimate period. Whatever is done or not done about the per diem system, the duty of reducing this percentage still presses. No system will avail without the use of pressure on the customer; why cannot this be tried as well now as at some future time? A Massachusetts road which "means business" has just entered suits against two consignees for demurrage bills of some $300 each.

Group Rates.

The decision of the Inter-state Commerce Commission dismissing the complaint of the Orange County milk producers, is right enough as regards the special case; but it shows in its reasoning a curious inability to understand the principles on which railroad rates ought to be based. The mistakes are so bad that we deem this opinion to be the most discouraging event in the whole history of the Commission thus far.

"Upon a wholly independent line of road," says the opinion, "disconnected from any competitive surroundings, it is probable that a mileage basis would be quite strictly adhered to, for the purpose of obtaining a fair remuneration upon short-distance traffic, and an increasingly larger sum at more distant points, thus producing the greatest possible revenue in each instance." And, though the opinion goes on to qualify this general statement to some extent, it only does so by showing that certain elements in cost of service do not vary in proportion to the distance traveled.

There is a much deeper reason than this to prevent railroads from adopting equal mileage rates. The attempt to base rates on cost of service, regardless of what the traffic will bear, would be a worse evil for the public as well as the railroads, than the attempt to charge what the traffic will bear, regardless of cost of service. The public, no less than the railroads, is interested in having rates made to secure a good volume of traffic, instead of having them based upon any preconceived schedule.

The amount of railroad charge which the milk traffic, or any other traffic, will bear is the difference between the price paid for the goods at the point of delivery, and the cost of production at the point of shipment. If the railroad charges more than this it stops the traffic thus burdened. Now, suppose that by a system of equal mileage rates, or anything like it, the road were compelled to increase its charges at the distant points, at the same time reducing them at the nearer ones. The distant points could no longer ship milk with advantage. Would the loss be made up at intermediate points? Probably not. The land at such intermediate points is already in use, and presumably to good advantage. The milk traffic might be somewhat increased, but the amount would be limited by the want of available land. For any such readjustment of rates on a mileage basis would have the effect of increasing the value and price of land near the cities, and would take away all power of extension from the milk producer, unless he was himself a real estate owner. The general effect of the whole change would be to restrict the area from which New York could draw its milk supply. The distant producers would be almost ruined; the consumers would suffer from scarcity of milk; the railroad would suffer from diminished volume of traffic; the only considerable gainers would be the milk shippers at intermediate points.

But these shippers claim that they are unfairly treated when they are put on an equality with the

long-distance ones, because they have to pay so much more for their real estate, and therefore suffer from a higher cost of production. There may be something in this, but its effect is much exaggerated. The higher price of real estate, as far as it exists, is apt to be a result, rather than a cause, of differences in railroad rates to the city. But if the difference is extreme, it shows that the community demands the land for other purposes than milk producing. Perhaps people who do business in the city wish the ground for residence. In that case, why should they not have it? It is surely better economy for the community to have its milk carried a hundred miles and its commutation passengers thirty than to have the state of things reversed. The argument that milk rates should be adapted to real estate values wholly ignores the demands of public convenience in these respects.

Passing now from theory to actual practice, let us see what is done by railroads "disconnected from any competitive surroundings" in the matter of grouping rates. Let us take the case of Germany, where this result is most completely secured, and where the effort to base rates upon cost of service has also been made wherever it was practicable. The coal mines of the district on the right bank of the Rhine are divided into three groups, each group embracing stations which are a number of miles apart. For all stations in the same group there is one tariff, which is, for one fixed consignment per week:

Group	I	49 marks per ton
	II	50 " "
	III	51 " "

But this is not all. The rates from the collieries to Bremen and to Hamburg are the same, though the latter port is 71 miles farther distant. From Dortmund to Hamburg (218 miles) is charged the same as from Dortmund to Bremen (147 miles). Bremen rates are, in fact, taken by almost all, if not all, North Sea ports, though some of them lie nearly a hundred miles apart. The German government has simply been forced to recognize on its coal business the principle of charging what the traffic would bear. The cost of production at the collieries of a given group was a tolerably definite sum; so was the price at tide water. The traffic charge had to be based on the difference between the two, independent of any question of mileage rates. It could not be made higher at some points, for the traffic would be stopped; it could not be made lower, because then the business would not pay. There was no other alternative than the course actually adopted.

The celebrated English decision in the Denaby Main Colliery case took a different view. It involved the theory that geographical position was a vested right, and that the roads had no right to put the more remote shipper on a level with the nearer. This was an English view of the matter; we cannot believe that it would be the American view. The whole progress of invention, and particularly of railroad invention, has been to remove the effect of inequalities of geographical position. It has given the farmers of the Mississippi Valley access to the markets of Europe. We cannot believe that the courts will stand in the way of progress of this kind. The Inter-state Commerce law forbade the railroads to create inequalities in favor of the more distant points, but it did not forbid the railroads to do all they could in the way of removing such inequalities. When the complainants in a case like this fall back on the short-haul clause they virtually say, "The law provides that I shall have as good a showing as my neighbor; which means, that I must have a better." We hope it means nothing of the kind.

The Commission has dismissed the complaint in the present case; but many of the grounds for its action are so weak that we see grave reason for apprehension as to what it may subsequently do in somewhat similar cases. We trust that its utterances in the opinion before us may have been due to mere inadvertence, and that the Board does not intend to abandon the strong ground of its early decisions for the much weaker position here occupied. If the Commissioners adopt the false principle of basing rates on cost of service, they will deprive themselves of the power of showing how the true, though dangerous, principle of charging what the traffic will bear is to be rightly and safely applied.

Highway Crossings.

The necessity of abolishing highway grade crossings near large cities is a subject which is fast becoming a burning question, and our correspondent, Archimedes Stevenson Watt, does well to call attention to the fact that the cost of building highway bridges over or under a line of railroad largely depends upon two factors: 1. Whether the height to be allowed includes a provision for brakemen, standing on the roofs of the cars, and 2, whether the damage to surrounding property is great or not. The latter question is largely influenced by the length of the approach, which in turn is dependent upon the maximum grade permissible and the headway required. As our correspondent points out, the headway can be reduced 5 ft. when continuous brakes become so universal that it is no longer necessary for brakemen to ride on top of the cars. This saving in the height of abutments and length, height and width of approach embankments would doubtless mean a very considerable reduction in the cost of substituting a bridge for a highway crossing, and the subject demands careful attention. The maximum grade permissible in the highway approach is, however, a point which should be settled. Our correspondent's proposed grade of 1 in 15 about quadruples the resistance on a fairly good macadamized road. This is possibly too severe, and is in excess of that found in the streets of most large cities.

The maximum grade allowed for highway crossings in England is far easier, and as these conditions have worked well for over 40 years, it may be presumed that they have been found fair for all parties concerned. The worst grade permitted to be used there on turnpike roads, which practically includes all good highways, is 1 in 30. Other public roads used by wheeled vehicles may have a grade of 1 in 25, and private roads maintained by persons or firms for their own use must not have a grade steeper than 1 in 16. When a railroad passes over such roads, the clear width and height must be 35 ft. × 16 ft., 25 ft. × 15 ft., and 12 ft. × 14 ft. respectively, the maximum height being, however, obligatory only for 12 to 9 ft. in the centre of the road.

For running a highway above a railroad, the first mentioned grade would necessitate approaches 600 ft. long on either side of the railroad, if the surface of the road was originally level with the track, and 20 ft. headway was required. Such a long approach would interfere considerably with cross streets or with streets running parallel with the railroad. If, however, the headway required was reduced 5 ft.; that is, from 20 ft. to 15 ft. above the rails, and the railroad was sunk an additional 5 ft., the length of the highway approach would be reduced to only 300 ft., the grade of 1 in 30, or 176 ft. per mile, being still maintained. The cost would thus be very considerably diminished, and the substitution of so short and easy a grade for the former level road, would not appreciably increase the haulage of the horses.

In many cases, the substitution of a bridge for a level crossing would really be a saving in a pecuniary sense to the railroad. Where a gatekeeper has to be maintained at the mimimum say of $10 per week, or $520 per annum, the expense, including repairs of gates and crossings, etc., cannot be less than $550 yearly, even in the cases where no gate-keeper is on duty during the night. This sum capitalized at 5 per cent. amounts to $11,000, and in numerous cases a safe and satisfactory highway bridge and approaches could be erected for considerably less than this figure. The difference would go far to pay for the maintenance of the bridge, while the saving in time and damages for persons and teams injured at the crossing would be pure gain. Irrespective, however, of any pecuniary aspect, humanity demands that in cities, especially where switching is carried on, all important streets and highways should be carried completely clear of the tracks. The number of persons killed and injured where a railroad runs through streets on a level is something which, if accurately recorded, would pale to insignificance the numbers lost in train accidents. The victims fall, however, singly or by twos and threes, and do not therefore attract the attention given to sensational accidents such as Chatsworth or Ashtabula, which, though sacrificing many victims at one stroke, occur but rarely, and therefore in a long course of years occasion far fewer deaths than the innumerable highway crossings.

The Speed of the Scotch Express.

The accompanying diagram is reproduced from official sections of that portion of the route between Carlisle and Edinburgh and Glasgow. The Edinburgh branch, indicated in dotted lines, leaves the main line at Strawfrank junction. The engine which performed this run, Carlisle to Edinburgh, 101 miles in 104 minutes, was illustrated recently in these columns.* One noticeable feature about the engine is that, notwithstanding the long grades and high speed attained, the engine had but 38,080 lbs. adhesion weight, about one-half of the amount considered necessary here in many engines of recent design. The train, however, was very light, being about equivalent to three Pullman cars.

The speed curves on the diagram show, however, the performance of the same engine with a heavier train between Carlisle and Glasgow. The gradients are indicated in full lines, the average grade in feet per mile being given above the line and the maximum grade below. The heights of the principal points are given in feet above sea level, and the distances are given in miles. The dot and dash line indicates the actual speed attained on a trip on July 6, 1888, with the regular 10 a. m. express from Glasgow to Carlisle. The broken line shows the speeds attained in the return trip from Carlisle to Glasgow. The results may be summarized as follows, the weights including engine, tender, and train, and the time being from start to stop:

	Distance. Miles.	Time. Mins.	Speed. Miles.	Load. Cars.	Weight. Lbs.
Glasgow—Strawfrank....	29	39½	44.0	5	381,696
Strawfrank—Glasgow....	29	38	45.5	5	381,696
Strawfrank—Carlisle	73¼	84½	52.0	7	466,816
Carlisle—Strawfrank	73¼	87	50.5	7	466,816

It will be seen that no excessive speed was indulged in at any point of the journey, the speed rarely rising above 65 miles per hour. The speed up the long grade fell to about half that amount. The portion of the line between Strawfrank and Glasgow has numerous junctions and a very heavy mineral traffic, and necessitates cautious running, hence the diminution in average speed despite the smaller train load and the more favorable grades.

This diagram is interesting as showing the actual performance of an engine with considerably less adhesion weight than we are accustomed to here. Any tendency to slip in the damp and misty climate of Scotland is however counteracted by the use of a steam jet to force a supply of sand on the rails in front of the drivers.†

The diagram and the above figures have been compiled from data kindly furnished us by Mr. F. W. Webb and Mr. D. Drummond, the respective locomotive superintendents of the two lines, the London & Northwestern and Caledonian, forming the West Coast route between England and Scotland.

The French International Exhibition to be held at Paris in 1889 (the Centennial of the French Revolution) will have an historical department devoted to means of transport in all ages and countries. The Committee of Organization for this section comprises many influential names, M. Alfred Picard, Inspector-General of Bridges and Highways, being President, and Vice-Admiral O'Neill, Director General of the Torpedo Service, being Vice-President. M. Maurice Bixio, President of the Carriage Co., of Paris, is the Reporter for this section, and the Secretary is Mr. Henry Péreire, managing director of the Southern Railroad of France. The other members include ten railroad directors and engineers and others holding high positions in the Department of Bridges and Highways. The exhibits will include models, drawings and actual specimens of all the different methods of transport from Roman galleys to locomotives and cars, and include such diverse exhibits as old railroad tickets and portraits of celebrated railroad men.

The suspension of railroad traffic in the Southern States on account of the yellow fever scare has been materially modified, as the more northerly and smaller towns became convinced that the danger was not great. The Cincinnati, New Orleans & Texas Pacific announces that its entire system is now open. The United States Government instructions concerning fumigation of fruit, tobacco and some other commodities have been liberally modified. At last accounts a good many towns in the interior of Mississippi, Alabama and Tennessee continued to prohibit the stopping of through passenger trains within their limits, or else to enforce a very strict quarantine on all persons alighting.

NEW PUBLICATIONS.

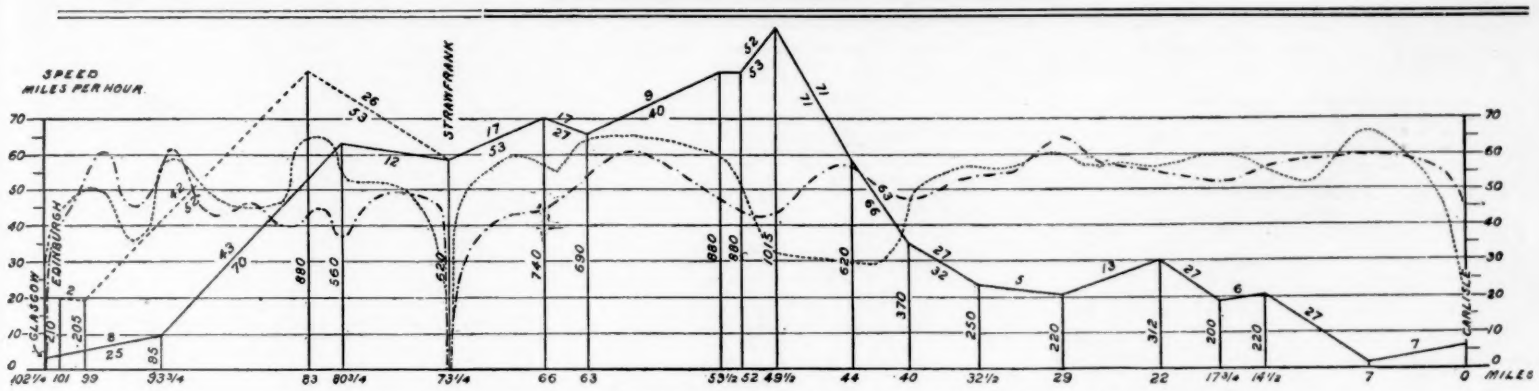
Bailey's Compendium of Passenger Rates and Divisions.—This semi-annual publication, referred to in our report last week of the meeting of the National Association of General Passenger and Ticket Agents, is a valuable book of reference for all railroad officers, and especially for general passenger and ticket agents. It contains condensed local tariffs of the prominent roads of the country, and of a large number of the smaller ones, including also Canadian and Mexican roads. All the omissions we have noticed were of minor roads. There are 25 pages of information about prorating in the computation of through fares and settlement for the same, and a full list of omnibus and other transfers in about 200 different towns and cities. This information concerning divisions, as well as the local tariffs—which latter occupy the bulk of the book—are simply careful reprints, with all useless matter excluded, of the circulars issued by various roads to their connections. The information is therefore official and to be relied upon. The infrequency of issue impairs the value of the book, as it grows old, of course; but, in spite of this, it must be extremely handy for reference, as it is printed on large pages (12 × 13), with ample room for alterations. The paper is heavy, and the type clear and handsome. A general ticket agent receiving a new circular from a foreign road can readily paste it into the book, or can make brief corrections with pen or pencil, the margins being generally ample for any probable requirement in this line. By thus taking a little pains, the special requirements of one's connections, which must be observed in preparing tickets over them, can all be made available in a single volume which occupies but little room on the desk.

English Accidents.

The British Board of Trade accident report for the half year to July 1, which has just been issued, gives accounts of nine train accidents investigated by the inspectors of the Board since the publication of the last report, which was for

*See *Railroad Gazette*, page 555, Aug. 24, 1888.

† This device was illustrated on page 604 of the *Railroad Gazette*, Sept. 14, 1888.



SPEED OF SCOTCH EXPRESS, CALEDONIAN RAILWAY, JULY 6, 1888.

the first quarter of the current year. These accidents and the lessons from them are, like previous ones, of interest to railroad men here as well as in England, and we therefore give herewith condensed accounts of the reports.

The first account is of the derailment of a passenger train at Holehouse Junction, on the Glasgow & Southwestern, where the leading wheels of the engine rode the point of a frog on the outside of a curve. The investigation is not of special interest, except as an illustration of the practice there. The derailment is attributed to a defective guard-rail, which was less than 8 ft. long and secured in place by only two chairs. One of the chairs was found after the accident to be broken, and the key by which the rail was fastened into it appears to have dropped out of place before the accident. The absence of this key is stated to be the direct cause of the derailment, the chair being exactly opposite to the point of the frog. The inspector says all guard-rails should have at least three chairs, and that the general practice is to have four.

At Loughton Branch junction, on the Great Eastern, a passenger train ran into the rear of a freight which had just started, after stopping at a home signal. The caboose and one car were derailed and several others damaged. Five persons were injured. The runner of the passenger train says that when he passed the distant signal, 500 yards back from the home signal, he saw that the latter was clear; but when he passed it it was at danger and he was on the wrong track. He claims that the signalman changed the signal and turned the switch after he had passed the distant signal. The switch at the home signal was a facing-point and the passenger should have taken the left hand track while the freight was on the right. In point of fact, the passenger took the same track as the freight, but the two tracks were parallel and on the same sleepers (overlapping each other) and the passenger runner at the time of the collision, when he was going about 6 miles an hour, still supposed that he was on his own track. There was much conflicting evidence as to exactly how the signal did stand, but the weight of the testimony favored the statement of the signalman, that the signal had not been lowered at all for the passenger train. Even if the signalman had made the mistake claimed, the runner would still have been to blame for satisfying himself about a signal with a mere glance at it a quarter of a mile off, and then taking no further notice of it. The signalman had been in the service 30 years, and the engineer 18. The fireman is censured for being busy breaking coal on approaching so important a junction, instead of being at liberty, so as to keep a lookout. The inspector, Gen. Hutchinson, incidentally criticises the arrangement of tracks in such a manner that the signalman has to discern at a distance of 540 ft. whether or not a train has cleared a fouling point.

At Keith, on the Great North of Scotland, where there is no interlocking, though there is a distant signal worked by a hand lever, a train approaching the station on the down grade ran over a misplaced switch and into the head of a train standing at the station. The engineer, who has been a runner 39 years, stated that he was running at 20 miles an hour when he passed the switch. The rules required that he should limit his speed at this point to 15 miles an hour, but as the evidence showed that he was running at the customary speed and that this excess would have been maintained regularly without any reprimand from the management, unless some accident occurred, Major Marindin says he is not inclined to throw much blame upon the engineer, "although he ought no doubt to have obeyed the rule to the letter, regardless of consequences." The engineer said that the speed at which he was running was necessary in order to make time; the inspector could not decide as to the correctness of this assertion, because the train had to be run past the station and backed into a headhouse in the time allowed from the last station. The Westinghouse brake did good service in slackening the speed, but the men on the standing train would undoubtedly have been injured had not the station master seen the impending collision and warned them off.

On the Great North of Scotland a mixed train was derailed on a piece of poor track just as it approached a reverse curve at the top of a grade. The forward pair of wheels under the tender jumped the track on the outside of the curve, but in about 30 ft the tangent commenced and the track soon after began to curve the other way, so that the train ran over 2,000 ft. without doing further damage. The runner saw what the trouble was and used a little steam, so as not to stop too suddenly. The track was laid in 1863 and was composed of 65-lb. iron rails, in 21-ft. lengths, laid on 20-lb. cast-iron chairs. The sleepers were of Scotch fir, 3 ft. apart. The inspector found that the track was in bad condition. He found four of the iron keys at the joints out of place in a very short length of track, and one fish-bolt out. The immediate cause of the derailment, however, was the breaking of a spring under the tender. This spring had been examined twice within a few months, but an old fracture which Maj. Marindin says should have been detected was undiscovered. The road is censured for working the men too long hours. The engineer and fireman worked 17 hours and 20 minutes on one day and 8 hours and 50 minutes the next, and the conductor nearly as long. This longer period "is positively dangerous," even if they have short hours the following day. Even the average of the two days is too high.

Near Tunnel Junction, Southampton, on the London & Southwestern, a passenger train ran into the rear of a standing freight, just after it had emerged from a tunnel and while it was in a walled cut where the track curved to the left (the train being on the left-hand track) and the view was quite short. Ten cars were derailed, the opposite track was fouled and 8 passengers and 2 trainmen were injured. The collision would have been much worse except for the efficiency of the vacuum and steam brakes. The cause was the carelessness of the passenger runner, who started from a station 900 ft. before entering the tunnel without looking at the semaphore. He started on a motion given by the guard, which was only to indicate that the work at the station was done and that the train was ready to start. If the guard had been in a van at the rear of his train as usual, his attention to the starting of his train against the signal would no doubt have been easily attracted by some of the station men. The freight beyond the tunnel was protected by a distant signal, and there was about 270 ft. in which to stop; Maj. Marindin therefore thinks that the runner was not very prompt in applying his brakes. The speed of the passenger train when leaving the tunnel is said to have been 20 miles an hour. If the tunnel had been clear of smoke the distant signal could have been seen the whole length of it, some 1,500 ft. The inspector recommends that a repeating signal be placed outside the further end of the tunnel.

Near Bonnybridge, on the North British, an express train running at 60 miles an hour was badly damaged by poles projecting from a freight train on the adjoining main track. Four passengers were injured, one being badly hurt by a pole which penetrated the side of the car. The passenger train was running on a slight curve to the left, and might have been stopped, or very much slackened, if the runner had crossed over to the fireman's side to look ahead, or if the fireman had been looking out (they were just passing a station) instead of attending to his fire. It appears that it is the custom to load stout poles, such as are used for props in mines, on coal cars, the whole load resting on the tops of the end boards. The freight conductor had just discovered the trouble and tried to signal the passenger train. He testified that freight of this character was set out of trains nearly every week on account of bad loading. This particular shipment was loaded at Dymock & Co.'s lumber yard, at Borrowstounness, but the railroad company is censured for laxity in the rules concerning loading.

At Harrogate, on the Northeastern, trains are admitted to the station by home and distant signals, but the block system is not in use through the yard. Trains draw up almost to the station and stop for ticket collection, and then proceed about a train length for the regular stop. When a train is in this latter position the signalman lets following trains in by lowering the signal part way. In this case he was to blame, because the rear car of the standing train projected back a short distance into that portion of the track which belonged to the ticket collecting platform. This and the main platform are continuous, and the dividing line between the two stopping places was not designated with sufficient accuracy. General Hutchinson regards the use of a caution signal as somewhat reprehensible, as the lamp shows only white and red, and therefore cannot be used to indicate caution at night. The runner, however, bears the chief blame, as he had ample space in which to stop, unless he was running very much faster than the rules allowed. His fireman is blamed for not having kept a lookout when running into the station, instead of attending to the damper and fire-door. The train ahead could be best seen from his side.

At Forth Bank Junction, Newcastle, on the Northeastern, a passenger train ran into a freight at the identical spot at which a similar collision occurred on Aug. 1, 1887. The passenger runner, although he knew that absolute blocking was not in force there, allowed himself to be misled by seeing a home signal drop about 1,500 ft. before he reached it. In point of fact it was dropped for the freight train which he afterwards ran into. Nevertheless, a vigilant lookout would have saved him, and he acknowledges that he was attending to the injector, which was giving the fireman some trouble. The caboose and two freight cars were tipped off the stone viaduct into a freight yard below. The fireman is censured for not keeping a lookout at a dangerous and crowded part of the line. The guard said he was looking out of the left side of the rear car, but if he actually had been doing so he could have applied the automatic Westinghouse brake in time to prevent the collision, and he is therefore blamed. The signalman is blamed for not giving the passenger train a caution signal. He says he looked for the freight but could not see it. Gen. Hutchinson seems to think, however, that he did not try very hard. On the occasion of the previous collision the inspector said that the road ought to institute the absolute block system, or else provide additional tracks at this place, but no improvement has been accomplished. Gen. Hutchinson "sincerely trusts that the directors will not wait for the occurrence of a third serious collision before taking the necessary steps," etc.

TECHNICAL.

Locomotive Building.

The Schenectady Locomotive Works are building three consolidation locomotives for the Richmond & Danville.

The Baltimore & Ohio has just completed, at the Mt. Clare shops, a four-coupled passenger locomotive, weighing 107,000 lbs., a freight locomotive, weighing 125,000 lbs., and a switching locomotive.

The Brooks Locomotive Works, of Dunkirk, N. Y., are building a passenger locomotive for the Chattanooga & Lookout Mountain Road. The company has also received an order from the Lake Shore & Michigan Southern for eighteen Mogul locomotives.

The Hinckley Locomotive Co., of Boston, Mass., has received an order from the Charleston, Cincinnati & Chicago for three locomotives for that road.

The Beckert balanced slide valve is being applied to several consolidation locomotives on the Louisville & Nashville.

Car Notes.

The United States Rolling Stock Co.'s Works at Anniston, Ala., have on hand contracts for building 1,000 cars. A newly designed 60,000-lb. platform car is being constructed for the Georgia Pacific. If it satisfies the railroad company it is stated that 300 will be ordered.

The Pullman Car Co. is building 600 box cars for the Oregon Railway & Navigation Co.

The Pennsylvania this week placed orders for 1,500 additional box cars. Seven hundred of the new cars are to be built at the company's shops at Altoona, and contracts for the construction of the remaining 800 have been divided between the following car works: Murray, Dougal & Co., Limited, Milton, Pa., 300; the Jackson & Woodin Manufacturing Co., Berwick, Pa., 150; the Carlisle Manufacturing Co., Carlisle, Pa., 100; the Lebanon Manufacturing Co., Lebanon, Pa., 150, Pardee, Snyder & Co., Watsontown, Pa., 100. The contract for this new equipment was divided on account of the immediate necessity for their use, and they will be built as quickly as possible. All the cars will be fitted with the Janney coupler.

The Norwood shops of the New York & New England have recently completed 20 new passenger cars, painted the standard color of the road outside and finished in mahogany inside.

The South Baltimore Car Co. has now nearly completed the 500 box-cars for the Richmond & Danville. The Jackson & Sharp Co., of Wilmington, Del., are also building 4 passenger cars for the same road.

Two hundred stock cars are being built at the West Albany shops of the New York Central & Hudson River.

The Duluth, South Shore & Atlantic has now received from Wilmington 20 of the 29 passenger cars ordered some time ago.

The Fitchburg road is completing a lot of 400 box cars at its shops at Charlestown, Mass., at the rate of four a day. Fifty stock cars are being built, and work has just been finished on a lot of 50 cars for the transportation of carriages. All these cars are equipped with the Jewett truck and the Westinghouse new triple valve. The company has now nearly 300 freight cars equipped with the new brake and is putting it on all new cars.

The Canadian Pacific has purchased a large track of land at Brownville, Me., and propose to erect repair shops and coal sheds there.

The Western New York & Pennsylvania is building at East Buffalo new repair shops 40 × 180 ft.

The Philadelphia & Reading has arranged with the Woodruff Sleeping & Parlor Coach Co. to furnish its coaches and service to be run on all branches of the Reading system upon which that company has been running its own parlor cars, including the New York and Atlantic City divisions. The 23 parlor cars now in use upon the Bound Brook Division will be withdrawn in a few days, and, after undergoing repairs and alterations, they will be used as regular day coaches.

The Chesapeake & Ohio is asking bids for 250 combined grain and coal cars.

The Indianapolis Car & Manufacturing Co. has a contract for building 100 box cars and 200 platform cars for the New York & Ohio road.

Bridge Notes.

The large new iron bridge of the Canadian Pacific at Mattawamkeag, Me., is fast approaching completion, and it is ex-

pected that trains will be enabled to run over it in a few days. The bridge contains two 150 ft. spans, and will cost about $100,000.

Orders have been given by President Nettleton, of the Kansas City, Fort Scott & Memphis, for the beginning of work on the foundation of the west pier of the bridge which is to span the Mississippi River at Memphis.

The county commissioners last week awarded a contract to Hoffman & Bates, of Portland, for building a bridge over the Snoqualmie River at Fall City, W. T., for $11,000.

The Western New York & Pennsylvania has built a new bridge over the Allegheny River. A two-span bridge is being built at Oil City. The work on this is being done by the Keystone Bridge Co., and they are to build another iron bridge near Postville.

Hoffman & Bates, of Portland, have the contract to build a bridge across the Snoqualmie River, at Fall City, W. T., to cost $11,000.

The Keru County Supervisors call for bids for two bridges, one 96 ft. long, and one 48 ft. Address N. R. Packard, Bakersfield, Cal.

Bids for erecting the bridge across Capelle Creek, Napa County, Cal., were as follows: San Francisco Bridge Co., 1st plan, $3,175; 2d plan, $4,485. Pacific Bridge Co., 1st plan, $4,595; 2d plan, $3,250. California Bridge Co., 1st plan, $4,900; 2d plan, $5,200. The contract was awarded to the San Francisco Bridge Co. for $4,485.

The Pacific Bridge Co. has a contract to erect a bridge at Wallapa, W. T.

The Berlin Iron Bridge Co. is replacing the wooden bridge across Qualray River at West Warren, Mass., with an iron structure.

Proposals are wanted by J. P. Freeman until Oct. 9 for the construction of an iron bridge at Dalton, Ga.

Proposals are asked until Oct. 8 for the construction of a 100 ft. iron bridge at Huntington, W. Va. Address George McKendree.

An iron bridge to cost $15,000 is to be built across the Wells River at Rutland, Vt.

Manufacturing and Business.

During the last two weeks in September the Dunham Mfg. Co. shipped car-door fixtures for over 2,000 cars, as follows: Allison Mfg. Co., 75 cars for South American roads; Chicago, Burlington & Quincy, 100 cars; Fitchburg Road, 200 cars; Northern Pacific, 250 cars for the St. Paul and Brainerd shops; Ohio, Indiana & Western, 25; Wabash, 300; Michigan Car Co., for Union Pacific, 700; Missouri Car & Foundry Co., 450 cars for St. Louis, Arkansas & Texas. They also have orders for 16,000 of their hot pressed steel stake pockets from Indiana Car & Mfg. Co. for the Atchison, Topeka & Santa Fe; 9,000 from Pullman Car Co. for Denver, Texas & Fort Worth. They are also filling large orders for the Servis tie plate for the Chicago, Santa Fe & California and Atchison, Topeka & Santa Fe; Delaware, Lackawanna & Western; Michigan Central, and Ohio & Mississippi.

Messrs. W. D. Allen & Co., 151 Lake street, will hereafter have control of the Chicago branch of the New York Belting & Packing Co. Messrs. Allen have for a number of years done an extensive business in leather belting for the account of Fayerweather & Ladew.

The Buffalo Seal & Press Co. this week commenced the manufacture of car seals and presses under a contract awarded to them by the government in June last. These seals are to be used on all cars containing bonded goods while in transit. The company is at the present time also supplying 104 roads with seals. The sales for September amounted to 800,000 seals.

Chas. A. Gould, owner of the Buffalo Steam Forge, is erecting at Black Rock, near Buffalo, a new plant, for the manufacture of all class of railroad forgings. The main building is to be 209 × 80 ft., with an extension 50 × 100 ft., and is fitted with the most improved machinery. The power is obtained from a 150 h. p. Harris Corliss engine. He has also secured room on which is to be built buildings for the manufacture of malleable iron castings.

During the last eighteen months 10,000 cars have been equipped with Janney couplers.

The Rodger Ballast Car Co., of Chicago, has been incorporated in Illinois with a capital stock of $500,000. The incorporators are: Thomas Rodger, Joseph E. Woods and William S. Brewster.

H. D. Layman and others, of Little Rock, Ark., have organized the Layman Automatic Car Coupler Co.

The Canton Car Co., of Canton, O., will change its name to the J. H. McLain Machine Co.

The Link-Belt Machinery Co., of Chicago, will erect a coal handling plant at the Perth Amboy, N. J., yards of the Pennsylvania, similar to that erected at the Port Richmond docks of the Philadelphia & Reading. The plant will consist of 10 pilers and 10 re-loaders. Considerable new work of a similar character is also to be done for the Philadelphia & Reading.

The Boston & Albany has given an order to the Palmer (Mass.) Electric Co. to furnish a number of arc and incandescent lights for the station at Palmer.

Iron and Steel.

The steel plant of the Glasgow Iron Co., at Pottstown, Pa., which has been running on single turn for some time, started on double turn this week. About 100 additional men will be employed, making about 200 in all.

The Atlantic & North Carolina Railroad will be relaid at once with steel rails.

The Minnesota Car Co., of Duluth, Minn., has been organized with a capital stock of $400,000. The works will consists of a rolling mill, machine shop, foundry and car works. This company is composed principally of capitalists from Richmond, Va., the President being John Anderson, of the Tredegar Company. The plant will consist of a rolling mill with two trains of rolls, machine shops, foundry and car works having a capacity of 30 cars per day. Ground has already been secured, and work on the new buildings will be commenced at an early date. The bulk of the machinery will be supplied by Pittsburgh manufacturers. M. V. Smith, metallurgical engineer of Pittsburgh, has been appointed consulting engineer.

The steel department of the plant of the Pottsville Iron & Steel Co., at Pottsville, Pa., which has been idle for about two months, has resumed operations.

The Carrie Furnace Co., of Pittsburgh, has decided to erect another blast furnace at Rankin Station, on the Baltimore & Ohio, adjacent to the present furnace located at that place. It will be 18 × 80 ft., and will have a capacity of about 200 tons per day.

The Sloss Iron and Steel Co.'s two new furnaces at North Birmingham, Ala., are rapidly nearing completion. One of them will blow in Oct. 1. The other furnace will not be completed until late in November. Each furnace will have a capacity of 125 tons of pig iron per day.

Mr. Charles Reece, formerly weighmaster for the company in Birmingham, has been appointed Superintendent of the new furnaces at North Birmingham.

The Clinton Rolling Mill, at Pittsburgh, which was shut down about seven months ago by the failure of Graff, Bennett & Co., resumed this week under a syndicate of creditors. It will give employment to about 400 men.

Justice Green, of the Supreme Court of Pennsylvania, this week handed down an opinion dismissing the appeal of Jacob Reese, of Pittsburgh, in the suit of the Bessemer Steel Co. The action was brought by the Bessemer Steel Co. to compel Reese to transfer certain patents involving the basic process in the manufacture of steel. The lower court decreed that Mr. Reese must assign all the patents to the Bessemer Co., for which the latter was to pay Reese the sum of $32,000. This opinion is sustained. Mr. Reese desired to introduce these patents in the South and the Bessemer Co. wished to prevent their use.

Coal Notes.

The *Tuscaloosa Times* calls attention to the competition in the New Orleans market between the coals from Pittsburgh and those from Alabama, the first coming a long distance by water and the other a short distance by rail, "but rates of freight on coal cannot apparently be reduced below a certain minimum, which minimum is still too high to enable it to present a dangerous rivalry to Pittsburgh coal." Saying that the crying need of all the great cities is coal that can be transported by water from means near at hand, the *Times* advocates the improvement of the Warrior River from Tuscaloosa to Mobile. The effect of even a partial improvement of a river is shown in some figures given to the *Coal Trade Journal* by Col. Craighill, U. S. A., showing the increase in shipments from the Kanawha River for the years ending June 1 from 1883 to 1888.

The shipments in millions of bushels were as below:

Years	Shipments by river.	Shipments by R. R	Total shipments.
1883	15.4	13.3	28.7
1884	18.4	12.1	30.5
1885	17.8	13 0	30.8
1886	17.9	14.0	31.8
1887	23.2	19.1	42.4
1888	20.1	21.0	41.1

The falling off in river shipments for 1888 is due to an unusually long duration of the low water stage in the Kanawha, and as the locks and dams in that river are completed for only about half its length, the river shipments suffered in consequence. In the case of the Kanawha coal most of the railroad coal goes east over the Chesapeake & Ohio, while the river coal goes south and west. If the coal had been moved on parallel lines the improvement of the river would doubtless have resulted in cutting into the amount transported by railroad, which would have been more or less thoroughly compensated to the railroad by return freights demanded by the consumption of the river miners.

Portable Rail Saw.

The Michigan Central Railroad has for some time past, in connection with its track work, been operating a portable steel rail saw (illustrated in the *Railroad Gazette*, Nov. 19, 1886), which was designed and built for them by the Industrial Works of Bay City, Mich. This device consists of a massive iron car carrying a cutting-off saw, rail-drills, hydraulic press for straightening, as well as the necessary attachments for handling rails, and the boiler and engine which supply power.

Much remarkable work in cutting off the ends of battered rails has been done with this machine, but the maximum yet reached was a recent accomplishment. On Sept. 12, Mr. J. B. Morford, Superintendent of the Canada Southern Division, telegraphed the Industrial Works as follows: "We have beaten the record with our rail saw, having cut and drilled (both ends) 372 rails in ten hours service on Tuesday the 11th inst." Among other roads who are using similar appliances may be mentioned the Chicago, Milwaukee & St. Paul; Chicago, Burlington & Quincy; and Chicago, Rock Island & Pacific. Reports from each of these indicate very large capacity.

Iron Ore Tonnage.

In a paper read before the Franklin Institute, Mr. John Birkinbine, speaking of the 13,063,439 tons of iron ore consumed in this country last year, stated that it equaled nearly 30 per cent. of the entire freight traffic of the Pennsylvania Railroad and its branches for the year, and its mining, loading into cars and transportation employed over 50,000 men, besides leading to a decided development in the manufacture of such mechanical appliances as hoisting engines, pumps, air compressors and rock drills used in getting the ore.

The principal localities contribute to our ore supplies as follows:

	P. c. of total output.		P. c. of total output.
Lake Superior region	37	Ohio	3
Foreign ores	9	New Jersey	4
Alabama, estimated	6	Virginia	4½
Cornwall Ore Hills, Pa	5	Missouri	3½
Lake Champlain district	6	Salisbury region	1
Tennessee, estimated	5	Georgia, estimated	1

But as the ores vary in the percentage of iron they contain, the contributions to our supply of iron are estimated as below:

	P. c.		P. c.
Lake Superior ores	44	Tennessee ores	4
Foreign ores	10½	Missouri ores	3½
Lake Champlain ores	6½	Virginia ores	3
Cornwall ores	5	Ohio ores	2½
Alabama ores	5	Salisbury region	1
New Jersey ores	4½	Georgia ores	½

A Large Order for Crossings.

Mr. Joseph O. Osgood, Chief Engineer of the Lake Shore & Michigan Southern, has ordered from the Morden Frog and Crossing Works, of Chicago, 40 crossings for use at 16th street, Chicago; also one slip switch or combination switch crossing. This is believed to be the largest order of crossings ever made, except in construction work. The style of crossing used is that known as the Morden "U" plate.

New Lake Steamers.

The Lehigh Valley Transportation Co., of Buffalo, has just contracted for two propellers to be built by the Globe Iron Works, Cleveland. The boats are to be finished by the opening of navigation next season. Each vessel will be 308 ft. over all, 290 ft. keel, 40 ft. beam and 25½ ft. hold. Each will carry four masts and the engines and boilers will be near the middle of the ship.

Electric Head-Light.

A test of an improved electric head-light for locomotives is to be made on one of the engines hauling the night express on the Indianapolis, Decatur & Western.

New Passenger Steamer.

The Harlan & Hollingsworth Co., of Wilmington, Del., has just made a contract with the Central of New Jersey, for the building of a passenger steamboat to ply between New York and Sandy Hook. The craft will be similar to the Monmouth, but larger and calculated to attain a higher speed.

Locomotive Performance.

The Cincinnati, Hamilton & Dayton received two express passenger engines, Nos. 128 and 129, from the Schenectady Locomotive Works last spring. These engines weigh empty, 97,000 lbs., and have averaged 7,560 miles every 30 days. The train performance sheets for August last show the actual cost of these engines per mile run to have been as follows: Repairs, 1.6 cents; fuel, 6.1 cents; stores, 3 cents; wages of engineer and fireman, 4.4 cents, making the total cost per mile run 12.4 cents. The average cost of running the other engines on the road was 17.4 cents. This was on a total mileage of 274,388 miles for engines, 547,688 for passenger coaches, 1,721,369 miles for loaded freight cars and 488,275 miles for empty freight cars, making a total mileage of 2,757,432 miles. During the month the passenger engines run 114,574 miles; the freight engines, 70,832 miles; the ballast engines, 10,138 miles; the switching engines, 74,164 miles; helping engines on grades, 4,680 miles, making the total of 274,388 miles run by the engines in service. The average train load of the passenger engines was 4 8 cars, while the freight engines hauled 24.3 loaded and 6.9 empty freight cars.

Spikes.

It is reported that one of the largest railroad spike manufacturing companies in Pittsburgh have had their mill shut down and are carrying spikes made in Richmond, Va., to Pittsburgh, with which to fill orders, claiming that they can bring these spikes from Richmond cheaper than they can make them in Pittsburgh.

New Canadian Pacific Steamer.

The twin-screw steamer "Islander" has just been built on the Clyde for the Canadian Pacific Railway, and is specially designed for passenger traffic between Victoria, the trading port of British Columbia, and Vancouver, the terminus of the Canadian Pacific Railway, the distance between these two towns being about 80 miles. With a gross tonnage of 1,600 tons, the vessel is 240 ft. long, 42 ft. broad and has a depth to main deck of 14 ft. 8 in. The draught of water being limited, twin screws are used, driven by two sets of triple-expansion engines, indicating 3,000 horse-power. The estimated speed is 15 knots an hour. The vessel throughout is fitted with electric lights. Cabins to accommodate about 130 passengers are built on the main and spar decks, with a promenade deck above. The hull is of mild steel and is subdivided into numerous water-tight compartments.

Hunt's Roller Bearing.

R. W. Hunt, of San Francisco, has invented an improved roller bearing of the class of roller-bearings in which are employed a series of bearing-rollers bearing directly on both the shaft and casing, and a series of separating-rollers of smaller diameter bearing neither on the shaft nor casing, but on the bearing-rollers, to keep the latter separate from each other, and in which the separating-rollers are kept from contact with the shaft by their bearing on the bearing-rollers and from contact with the casing by their bearing on an encircling ring. This ring having only the separating-rollers for its bearings, its axis is liable to shift from the axis of the shaft, and the object of Mr. Hunt's invention is to limit this shifting by interposing the ring between journals of the bearing-rollers on its periphery and journals of the separating rollers on its inner side, the two series of rollers being so arranged relatively to each other and their journals made the proper dimensions to insure rolling and prevent rubbing contact. This ring bears at its periphery on journals of the bearing-rollers as well as at its inner side on journals of the separating-rollers.

It is claimed that this roller-bearing is specially adapted for journals in which there is little wear, such as window pulleys and sliding door rollers.

THE SCRAP HEAP.

Heavy Special Traffic in Iowa.

The *Iowa State Register* gives the following account of the passenger traffic on the Chicago, Rock Island & Pacific, between Des Moines and the Fair Grounds, on the occasion of the recent state fair:

Fair week is always a busy week with the Rock Island, and the amount of business done is something enormous. This year they used 69 extra coaches constantly. These coaches were leased from various roads. The rent paid by the company for foreign coaches was about $400 per day. To draw these coaches they employed nine of the heaviest passenger engines, and the nine crews to manage the trains numbered 39 men. They handled of freight for the fair 151 car-loads. The company had on duty 26 special flagmen during the week, 15 extra yardmen, 12 ticket sellers and collectors and 31 special policemen. In addition to this number of policemen a large number of detectives were employed, the exact number of which Superintendent Givin did not divulge. The number of passengers handled between the city and the state fair depot was about 120,000, which is 25 per cent. more than that of any previous year. These people were carried in trains of eight coaches each. Four of these trains were always in motion and part of the time five. Each train made a round trip in about twenty-seven minutes, and a train left the city about every 7 minutes. On one occasion when pushed, 5 trains of 800 passengers each were brought in and safely handled in exactly 14 minutes. And during one of the busiest times 15 trains, carrying each from 800 to 1,000 passengers, were brought in in 74 minutes, or a little less than 5 minutes to a train. There was not the slightest casualty of any kind, not a wheel off of the track or a switch misplaced. Everything was done with regularity and order, each individual man did his own duty and did it well. On the busiest day of the fair, between 7 a. m. and 7 p. m. nearly 53,000 passengers were handled, and during the 10 years of fair in this city nearly a total of 1,250,000 passengers were handled with never a single accident.

The fair trains have during the past ten years been under the personal supervision of General Superintendent Royce, assisted during the last five years by Superintendent John Givin. Mr. Royce said yesterday: "The measure of success we have attained in handling state fair people is due to the rank and file of our employés. Each one is a man of individual worth, knows his duty and knows how to perform it. All our men, from engineers to flagmen, take a pride in doing their work well."

The Scalpers Scalped.

A Chicago dispatch of Oct. 1 says: Weeping and gnashing of teeth are heard among the railroad ticket brokers. They have been victimized to the tune of from $4,000 to $5,000 by two clever forgers, one a fine looking man and the other a remarkably handsome woman. Saturday afternoon the couple entered the office of a prominent scalper and offered for sale two round trip tickets from New Orleans to New York, via the Illinois Central to Chicago, thence by the Michigan Central. The coupons for passage from the Crescent City to Chicago were gone, and the man explained that he and his wife had decided to remain here for some months, and, as the tickets were limited to sixty days, he wished to dispose of them. The broker offered $57 for the two, which, after some argument, was accepted. The broker yesterday had an opportunity to dispose of one of the tickets. It was necessary, however, to have the Michigan Central ticket agent witness the signature. When presented to him he pronounced the ticket a forgery and said that no such tickets had been issued by the Illinois Central. On investigation this proved to be true, and the broker had to refund the money. A visit was then paid to the other brokers' offices. Out of the one hundred and odd in the city nearly every one had been victimized to the ex

tent of from two to five tickets. The woman in all cases accompanied the man, and when more than two tickets were offered the swindler explained that he was accompanied by his son or sons. The ticket is a very clever imitation of those issued by the Illinois Central.

Lake Ores.

The Iron Trades Review notices an increasing demand for Bessemer ores, buyers coming to Cleveland to the number of from one to half a dozen daily. With steel rails at $28 at tidewater and $29 in Pittsburgh, the only explanation for this increasing demand must lie in the extending employment of Bessemer and open-hearth steels for structural purposes, nails, boiler plate, wire, and to replace iron bars for many purposes. The *Review* thinks that steel bars have probably displaced iron to the extent of 25 per cent. in the Western market this year. Besides this the ship building, both on government and private account, on the Atlantic coast and the lakes must appreciably affect the demand.

The price of ores has advanced at least in proportion to the advance in lake freights, and there is a disposition to get down as much ore as is possible before the close of navigation.

Victoria and Melbourne Centennial Exhibition.

The colony of Victoria, which was separated from the parent colony of New South Wales in 1851, has an area of 87,884 square miles, about a thirty-fourth part of the continent of Australia, an area slightly less than that of Wyoming and about 4,000 miles greater than that of Nebraska, with an estimated population of 1,047,308. The banking establishments in the colony have £43,623,060 in assets. In 1886 the post-office and general saving banks had £3,589,916 to the credit of 189,359 depositors, and the amount deposited with the various building societies at the end of the same year was £2,910,792. The estimated value of property per capita in 1885 was $1,476. The "Victorian Year-Book" divides the population as follows: Government and defense, 4,494; learned professors, etc., 13,950; domestic duties and scholars (!), 465,612; attendance, 38,709; traders, 17,616; carriers by land and sea, 17,568; agricultural and pastoral, 124,202; mechanic, textile fabrics and metals, 111,118; foods and drinks, 15,277; laborers, etc., 25,736; persons of property or rank, 1,979. In 1886 the average attendance at the principal places of public worship was 351,061, and the average attendance at Sunday schools was 141,781. The total amount expended on public instruction in that year was £659,553, of which only £3,549 was paid by parents. Thirty-nine letters and postal cards were sent per capita, and 17.71 newspapers.

The climate of Victoria is equable, the average temperature of a year is between 57° and 59° F. with an extreme summer temperature of over 100°. Ice is sometimes seen during mid winter (July), but it merely lasts through the day. There is much excellent land of rich light loam near the coast and vast expanses inland of thickly grassed indulating timbered lands. All English agricultural products can be raised in Victoria, and in addition, sugar, oranges, olives and grapes. Victorian wines having won a good reputation. The principal exports of Victoria were at first wool and gold, but in 1869, after some opposition from the squatting interests, a liberal land act was passed, and since that farming has increased. In 1873 only 964,996 acres were under cultivation, in 1887-88 the cultivated land had increased to 2,576,405 acres, and the production of wheat was 13,328,375 bushels. The declared value of wool produced in 1886 was £2,960,890 and of gold "raised" £2,660,784. Victoria having yielded £217,572,728, to the gold in circulation between 1851 and 1886.

Melbourne, which was settled only 53 years ago, and hence is not celebrating its own centennial, but that of Australia, is on the Yarra River, about nine miles from where it debouches into the magnificent Port Phillip Bay. It is well built of brick and stone, with one street one-third wider than Broadway, contains the public buildings of the colony, and its 371,630 inhabitants do nearly all of the manufacturing done in Victoria. Within the past year a boom in real estate has commenced in Melbourne, lots on the principal streets reaching in some instances £2,000 per foot frontage, without at present any sign of a decline in value.

The exhibition, which was opened Aug. 1, with a procession and a band, which, among other national airs gave "The Star Spangled Banner" and "The Red, White and Blue," occupies the site of a famous building which was burned, near the centre of the city. The inclosed space, which is lighted by Brush arc lamps, covers 33 acres, and the Victorians remember with pride that the building of the London exhibition of 1851 covered only 20 acres.

Besides exhibits from all of Australia, Great Britain and her colonies, the United States, with Germany, France, Austria, Russia and other European countries down to Turkey are represented, with exhibits from Japan, Madagascar and some of the South American states.

The exhibit is said to be very full in machinery lines, but is not yet fully in order, as was to be expected on the day for opening. About 50,000 people were present the first day.

The information given above is largely derived from the *Colonies and India*, which publishes a supplement describing the opening proceedings.

RAILROAD LAW—NOTES OF DECISIONS.

Powers, Liabilities and Regulation of Railroads.

In Pennsylvania the Supreme Court holds that a railroad which, constructing its line on an embankment obliquely, across a county road, fills in the road to make approaches at grades of 5½ and 7 ft. to the hundred, and builds, besides, a new road 100 yards longer which passes beneath the track, complies with the statute of that state, which requires that when a crossing over a highway is necessary it must be constructed "so as not to impede the passage or transportation of persons or property." Also, that although deep cuts near a grade crossing render it dangerous unless protected by a flagman, the Court will not enjoin the building of the crossing at grade on the presumption that no flagman will be employed, or that if employed he will be negligent.[1]

In Illinois the Supreme Court decides that a railroad has the right to fix the number and location of its stations. The Act of 1877, which simply requires that corporations shall "build and maintain depots"—that is, buildings—for the "comfort of passengers and for the protection of shippers of freight, where such railroad companies are in the practice of receiving and delivering passengers and freight, at all towns and villages on the line of their road having a population of 500 or more," does not make it the duty of a railroad to "establish a depot" or station at every town or village on the line of its road having a population of 500 or more.[2]

In New Jersey various persons made voluntary contributions to a fund "for the purpose of placing the Sussex Railroad extension from Newton to Branchville in the hands and under the control of the Sussex Railroad Co., free and clear of all incumbrance." The Supreme Court holds that a party, who had previously conveyed to the company a right of way across his land for the extension, without retaining any claim against the company or any lien upon the land for the purchase money, was not entitled to call the treasurer of the fund to an account, in order that the fund might be applied to the payment of the price. Such a payment is not within the scope of the designated purpose.[3]

In Indiana the Supreme Court rules that the statute of 1852 conferred upon a railroad company, in connection with other conceded powers, the right to accept a grant of the right of way, executed to the corporation in advance and in aid of its organization, and authorized such company, after its organization, to ratify and accept the grant thus made. The failure of the company to construct its road within the time limited by the statute cannot be taken advantage of by a landowner, over whose land the road has been subsequently constructed, to eject the company from the land.[4]

In Illinois the Supreme Court holds that under the description "all the line of railroad heretofore belonging to the Springfield & Illinois Southeastern Railway Company, * * together with the right of way and all the real and personal property of the said railway company," the subsequent words "in any manner used or appropriated for the operating and maintaining of said line of road," do not describe an additional kind or title of property intended to be conveyed, but simply the use to which the property has heretofore been devoted.[5]

In New York the Court of Appeals rules that a temporary lease by a railroad of land and the beginning of construction of a track thereon for the accommodation of a private business enterprise, needless for the general purposes of the railroad, are not sufficient to bar the right of another railroad company to acquire such land for public railroad use. Also that after it has been shown by an unsuccessful attempt to agree with a lessor land owner for the acquisition of land that the land cannot be acquired by agreement, a subsequent attempt to agree with the lessee is not requisite to entitle a railroad company to maintain a statutory proceeding to acquire the land.[6]

In Pennsylvania a landowner executed to a railroad company a deed of a strip of land four rods wide for its track; the only consideration mentioned therein was $1, with a reference to building the road on a line desired by the grantor; thereafter the grantor brought an action against the railroad company for payment for the land, etc., claiming that at the time of the execution of the deed, and as an inducement thereto, a parol agreement was entered into between him and the agent of the railroad company, to the effect that the company should pay him what his land was worth and for fencing and damages. The Supreme Court affirms a verdict in favor of the railroad.[7]

In Indiana the Supreme Court holds that where a railroad company enters upon the land of another without the consent of the owner, and not by the exercise of the right of eminent domain, it may be ejected from the land, or enjoined from appropriating or using it, if the owner proceed with reasonable promptitude; but if he stands by and acquiesces until the company has expended its money and constructed its road across his land, and the road has become a part of its railroad line, and the public as well as the company have acquired an interest in the maintenance of the enterprise, the owner forfeits every remedy except that of proceeding to have his damages assessed and collected from the company.[8]

In Illinois the Supreme Court holds that where in a railroad charter it was provided that "in case of disagreement as to the right of way, price of land or lands, or other privileges embraced in this section, the same may be condemned" under the eminent-domain laws in force, a railroad company acquiring the rights, as successor of such corporation, for the purpose of obtaining material, can only do so in the event that the company seeking the appropriation is unable to agree with the owner for the purchase of the same.[9]

In California the Supreme Court rules that under the state constitution, providing that private property cannot be taken or damaged for public use save upon compensation first made, a railroad company is not entitled to right of way over a street, save upon compensation to the owner of the fee, allowed by a jury. The adjoining owner may maintain ejectment against the railroad.[10]

Carriage of Goods and Injuries to Property.

In New York the waybill of goods to be transported from Boston to Little Falls, a station on the N. Y. C. & H. R. Railroad, dated the 10th of the month, designating the property as "merchandise from Boston to Little Falls," describing it as "machinery" (which it was), and specifying the car on which it was shipped, reached the agent of the Boston & Albany road, by which the property was shipped, at the terminus of that road at Albany, on the 11th of the month, and was on the same day delivered to the agent of the N. Y. C & H. R., the connecting road; the property reached Albany on the 13th, on B. & A. car 2390, and was transferred by the B. & A., together with machinery consigned to St. Louis, to N. Y. C. car No. 20126, which car was held by the N. Y. C. at Albany for want of a conductor's slip or other evidence of destination; on the 14th or 15th the B. & A. agent sent to the N. Y. C. agent the following notice: "2390 B. & A. Boston to St. Louis, 10, transf'd to 20126 N. Y. C.;" thereafter, without examination, the N. Y. C. sent the car through to St. Louis, without stopping at Little Falls; and the consignee of the goods shipped to Little Falls sued the N. Y. C. for damages for delay in delivery. The Court of Appeals holds that the N. Y. C. had sufficient notice of the destination of the goods, or sufficient means of knowledge thereof, in its possession, to render it guilty of negligence and liable therefor, although the B. & A. might also be partly in fault.[11]

In Alabama, the Supreme Court holds that a carrier receiving goods to be transported over its own and connecting lines is not, in the absence of an express contract, liable for the negligence of the connecting lines. In this case the defendant railroad had received a car loaded with cotton upon its side track preparatory to shipment over its line, from the E. A. Ry. Co., which made the contract for transportation with the owner. The two companies had made arrangements for shipping goods over each other's lines; and defendant's agent had reported the car to the car accountant but there was no evidence of any shipping directions from the E. A. Ry. Co. The Supreme Court holds that, though it was customary for defendant to receive such company's cars on its side track for transportation, yet it will not be presumed that the former assumed the responsibility of a carrier before knowing to whom and where to ship the cotton.[12]

Injuries to Passengers, Employes and Strangers.

In Indiana a passenger in going from the ticket office to the cars stepped in a hole in the platform and injured his leg. A judgment for damages against the railroad is affirmed by the Supreme Court.[13] In Illinois the plaintiff, Smith, was a passenger on the regular train on defendant's road, from Ottawa to Streator, and occupied a seat in the rear coach. The train being temporarily detained on the track on account of some obstruction in front, a freight train, coming from the same direction the passenger train had come, ran into the rear coach, in which plaintiff was seated, with great force and violence. The coach was wrecked and nearly or quite destroyed, and by the accident plaintiff sustained severe injuries. A verdict for the plaintiff is affirmed by the Supreme Court.[14]

In Illinois, a train in a snowstorm was stopped at night by a drift of snow across the track, and some of the passengers, alarmed by the approach, from the rear, of a snowplough, around a curve, upon an adjoining track, apprehending it to be upon the main track, upon a whistle being sounded from the locomotive on their train, attempted to escape from the car across the adjoining track (escape being barred by the snow upon the other side), and in the effort one of the passengers was fatally injured by the snowplough. The Supreme Court rules that there was no negligence in blowing the whistle and the railroad is not liable.

In Alabama the Supreme Court holds that it is the duty of a railroad company, to keep its depot, platform, and approaches lighted at night a reasonable time before and after the departure of trains.[16]

In Pennsylvania a brakeman fell and was killed while attempting to climb to the top of a box freight car, by steps or bars at the end furnished for that pupose, but on the top of which car there was only an iron spike in place of the usual handhold. The Supreme Court rules that as the steps or bars on the end of the car were good, and until the deceased let go of them he was safe, but if he did let go of them before he was sure of a secure grip on the top of the car, the fault was his own—there was no negligence in the railroad and it is not liable.[17]

In Indiana the Supreme Court holds that an employé in the contract of hiring, while assuming ordinary and natural risks incident to the service, does not assume the risk of injury from unusual hazards. A brakeman would not, by his contract of hiring, assume the risks of injury from a low bridge, unless he had knowledge of the hazard. Such a hazard is not one ordinarily and naturally connected with the service.[18]

In Georgia it is decided by the Supreme Court that where a minor is hired by his father to a railroad to transfer lumber from one car to another, which work both had done for the company before, and which is not more than ordinarily hazardous, is injured by the lumber slipping and falling, the railroad is not liable by reason of its failure to specially warn the boy of danger before putting him to work.[19]

In California, the plaintiff, a yard master, was injured by a train backing on him, while being run in a manner prohibited by a city ordinance, with no light on the rear end. The night was dark. Plaintiff stood between two tracks, in a place he knew to be dangerous, and where he need not have been in the discharge of his duty, his back toward the approaching train, and the track on which it was running. There was evidence that the bell was ringing at the time. The accident occurred in a yard where there were many tracks, and trains constantly being made up. The Supreme Court holds that the proximate cause of plaintiff's injury was his own negligence, and that he could not recover, though defendant had violated the ordinance, and was guilty of negligence in running its train.[20]

In Pennsylvania the Supreme Court decides that a crippie with a stiff leg, who, walking in the night time and without a light, along a sidewalk, which is a safe path across a railroad, and with which he is familiar, leaves the sidewalk hastily to cross the highway and railroad diagonally, gets beyond the crossing planks on the other side of the highway, stumbles among the rails and is injured, is guilty of contributory negligence and cannot recover damages from the railroad company, even though it is the duty of the company to have extended the planks beyond the point at which he fell.[21]

In New Jersey a person who had business with the freight department of the Pennsylvania road, whose freight offices are on Market and Alling streets, Newark, was struck by a car while he was standing on a track in the drilling yard of the company with his back toward the only direction of danger. The Supreme Court holds that he was negligent, and the railroad is not liable. Where a railroad company provides offices for the transaction of its business accessible from the public streets, the presence in the freight yard of the company of a person having business with such offices is not a necessary incident of his business with the company. He is at best a licensee toward whom the company owes no special duty.[22]

The Court of Appeals of Maryland decided that where a person in attempting to cross a railroad track about 20 ft. in front of a slowly moving engine, falls and is injured, the fall is a risk which the plaintiff voluntarily assumes in attempting to cross the track, and the company is not responsible for the result, there being nothing to show that the plaintiff was placed in a position of peril by any act of the company. If a person at a railroad crossing sees an approaching train before going upon the track, he does not require any signal of its approach, and cannot complain of the absence of such signals.[23]

1 North Manheim Tp v. R & P. R. Co., 12 Cent. Rep., 485.
2 People v. C. & A. R. Co., 15 West. Rep., 156.
3 Cresman v Smith, 12 Cent. Rep., 876.
4 Bravard v. C., H. & Ind. R. Co., 14 West. Rep., 817.
5 O. & M. R. Co. v. Barker, 15 West. Rep., 139.
6 R. H. & L. R Co. v. Babcock, 13 Cent Rep., 234.
7 Luhr v. S. & C. R Co., 13 Cent. Rep., 214.
8 Bravard v. C., H. & Ind. R. Co., 14 West. Rep , 817.
9 Reed v. O. & M. R. Co., 15 West. Rep., 190.
10 Porter v. Pac. Coast R. Co., 18 Pac. Rep , 428.
11 Waite v. N. Y. C. & H. R R.R. Co., 13 Cent. Rep., 242.
12 Ala. G. S R. Co. v Mt. Vernon Co., 4 South. Rep., 356.
13 O. & M. R. Co. v. Hecht, 15 West. Rep., 122.
14 C., B. & Q. R. Co. v. Sullivan, 15 West. Rep., 45.
15 C., R. I. & P. R. C. v. Felton, 15 West. Rep , 41.
16 Ala. G. S. R C. v. Arnold, 4 South. Rep., 359.
17 Fair v. Penn. R. Co., 12 Cent. Rep., 530.
18 L., N. A. & C. R. Co. v. Wright, 15 West. Rep., 320.
19 E. & W. R. Co. vs. Sims, 6 S. E Rep., 595.
20 Ryall v Cent. Pac. R Co. 18 Pac. Rep., 430.
21 D., L. & W. R. Co. v. Cadow, 12 Cent. Rep , 725.
22 Diebold v. Penn. R Co., 12 Cent. Rept., 799.
23 State v. B. & O. R. Co., 12 Cent. Rep., 890.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Atchison, Topeka & Santa Fe, quarterly, 50 cents per share, payable Nov. 15.

Chicago, Rock Island & Pacific, quarterly, 1½ per cent., payable Nov. 1.

Cumberland Valley, quarterly, 2 per cent., payable Oct. 1.

Delaware, Lackawanna & Western, quarterly, 1¾ per cent., payable Oct. 20.

National City & Otay, ½ per cent., payable Oct. 1.

New London Northern, quarterly, 1¼ per cent., payable Oct. 2.

Norfolk & Western, 1½ per cent., on preferred stock, payable Oct. 25.

Pittsburgh, Fort Wayne & Chicago, regular, quarterly, stock, 1¾; special quarterly, 1¾, payable Oct. 1 and 2.

Raleigh & Gaston, semi annual, 2 per cent.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Alabama Midland, special meeting, Montgomery, Ala., Oct. 13, also Bainbridge, Oct. 16.

Downington & Lancaster, 233 South Fourth street, Philadelphia, Pa., special meeting Nov. 5.

East Tennessee, Virginia & Georgia, special meeting, Knoxville, Tenn., Oct. 18.

New York & Northern, annual meeting, 96 Broadway, New York, Oct. 15.

Ohio & Mississippi, annual meeting, Union Depot, Cincinnati, O., Oct. 11.

Western Maryland, annual meeting, Baltimore, Md., Oct. 17.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *General Time Convention* will hold its fall meeting at the Hoffman House, New York City, Oct. 10, at 11 o'clock.

The *American Society of Mechanical Engineers* will hold its eighteenth convention and ninth annual meeting in Scranton, Pa., beginning Monday evening, Oct. 15.

The *American Institute of Mining Engineers* will hold its fifty-second meeting at Buffalo, N. Y., beginning on Tuesday evening, Oct. 2, 1888.

The *American Association of Railway Chemists* will hold its next meeting in Baltimore, Md., in October.

The *New England Railroad Club* meets at its rooms in the Boston & Albany passenger station, Boston, on the second Wednesday of each month.

The *New York Railroad Club* meets at its rooms, 113 Liberty street, New York City, at 7:30 p. m., on the second Thursday in each month. The next meeting will be held Oct. 11.

The *Central Railway Club* meets at the Tifft House, Buffalo, the fourth Wednesday of January, March, May August and October.

The *American Society of Civil Engineers* holds its regular meetings on the first and third Wednesday in each month at the House of the Society, 127 East Twenty-third street, New York.

The *Boston Society of Civil Engineers* holds its regular meetings at its rooms in the Boston & Albany station, Boston, at 7:30 p. m. on the third Wednesday in each month.

The *Western Society of Engineers* holds its regular meetings at its hall, No. 67 Washington street, Chicago, at 7:30 p. m., on the first Tuesday in each month.

The *Engineers' Club of Philadelphia* will hold its next meeting at the house of the Club, 1,122 Gerard street, Philadelphia, Oct. 6.

The *Engineers' Society of Western Pennsylvania* holds regular meetings on the third Tuesday in each month, at Pittsburgh, Pa.

The *Engineers' Club of Kansas City* meets at Kansas City, Mo., on the first Monday in each month.

The *Civil Engineers' Society of St. Paul* meets at St. Paul, Minn., on the first Monday in each month.

The *Montana Society of Civil Engineers* meets at Helena, Mont., on the third Saturday in each month.

American Society of Civil Engineers.

A meeting of the society will be held on Wednesday, Oct. 3, at 20 o'clock. A paper by John A. Bensel, Jun. Am. Soc. C. E., on the New Transfer Bridge, Harsimus Cove, Jersey City, N. J., will be read and discussed. After the meeting a light collation, provided by special subscription of resident members, will be served.

American Institute of Electrical Engineers.

The twenty-eighth meeting of the Institute will be held at the house of the American Society of Civil Engineers, 127 East Twenty-third street, on Tuesday, Oct. 9, at 8 o'clock p. m.

The programme of the evening will be the discussion of Mr. Frank J. Sprague's paper on "The Solution of the Municipal Rapid Transit Problem," which was read at the last special meeting of the Institute, June 19. Messrs. M. B. Leonard, of Richmoud; George W. Mansfield, of Boston, and Robert W. Blackwell, of New York, have signified their intention of discussing the paper.

PERSONAL.

—James W. Way has been appointed Chief Engineer of the Missouri Pacific.

—E. V. Sedgwick has been appointed Master Mechanic of the Duluth, South Shore & Atlantic at Marquette, Mich.

—R. S. Lukenbill, Purchasing Agent of the Florida Railway & Navigation Co., died in Fernandina, Fla., Sept. 26, of yellow fever.

—Mr. Albert Fink, Commissioner of the Trunk Line Association, arrived in New York this week. Mr. Fink spent the greater portion of his stay in Europe at Carlsbad.

—General Freight Traffic Agent John S. Wilson, of the Pennsylvania, is reported to have resigned his position with that company, to take effect Oct. 15.

—Mr. Charles S. Churchill, who was appointed Engineer in Charge of the West Virginia & Ironton branch of the Norfolk & Western, last May, has resigned that position to become Engineer of Maintenance of Way of the Norfolk & Western.

—Senator Gibb Ross, a large ship owner and lumber merchant, died at Quebec, Oct. 2, leaving a fortune estimated at between $8,000,000 and $10,000,000. He was the largest shareholder in the Quebec & Lake St. John Railway, and was the promoter of a scheme to bridge the St. Lawrence at Quebec.

—J. Jay C. Daughters, the advertising and press agent of the New York, Lake Erie & Western, died suddenly Oct. 1, in the Union Station at Kansas City, Mo., a few moments after his arrival on a train from Chicago. He was en route for Los Angeles, Cal., where he was going for his health. Mr. Daughters was 34 years old, and was born in Philadelphia, Pa.

—Thomas H. Carter, the newly elected Commissioner of the Southern Railway & Steamship Association has for a number of years been a member of the Board of Arbitration of the Association, which was composed of himself, E. K. Sibley and John Screven. Mr. Carter has resided at Manquin, King William County, Va. He was for some time previous to being put on the Board Railroad Commissioner of Virginia.

—Mr. J. L. Hinckley, Superintendent of the Wabash, Chester & Western road, was knocked off a trestle by the boom of a derrick, at Chester, Ill., on Sept. 21, and died from the effects of his injuries the following day. Mr. Hinckley had been Superintendent of the Wabash, Chester & Western for two years, and had long been connected with Western roads. His son was formerly Chief Engineer of the St Louis, Arkansas & Texas, but resigned that position last summer, and is at present in Europe.

—The death of Professor Winkler, of Berlin, at the age of 53, deprives Germany of a very active and intelligent instructor in the science of bridge building. Professor Winkler was born on the 18th of April, 1835, at Falkenberg, near Forgan, and received a thorough technical education, after serving out his time as a one-year volunteer in the Prussian army, which means in that country that he was already well enough educated to pass certain prescribed examinations, and that his parents were well enough off to provide for his own support during his term of service. By this he was enabled to escape the otherwise compulsory three years in the army. He began at once in the vocation of teacher and rose steadily, though with many changes of place, to the professorship of bridge building in the Prussian State Academy of Building at Berlin, in 1877, at the age of 42. He became rector of the Academy in 1882. His death was probably induced by exposure in examining a number of bridges on the once popular Schifkorn system for the Austrian government, which had been led by the fall of one of them to suspect the others. This exposure, which took place between 1870 and 1880, cost him an eye. It did not diminish his activity, but frequent violent headaches thereafter ended in a nervous prostration in 1886, from which he never entirely recovered, but died only in the present year.

ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio.—The jurisdiction of the Engineer of Maintenance of Way of the Main Line Division has been extended over the Philadelphia division.

The title of Engineer of Maintenance of Way of the Philadelphia Division has been changed to that of Roadmaster, and he will report to the Engineer of Maintenance of Way.

Bowling Green, Hartford & Ohio River.—At a meeting of the directors held in Evansville, Ind., last week, Laban M. Rice, of Evansville, was elected President; E. T. Leonard, Peoria, Ill., Vice-President, and J. E. Williamson, Evansville, Secretary and Treasurer, with headquarters at that city.

Chesapeake & Ohio.—President M. E. Ingalls has announced the following as officers of the reorganized company: C. E. Wellford, formerly Secretary of Gen. W. C. Wickham, is made assistant to President Ingalls; H. D. Whitcomb is appointed Consulting Engineer, to have charge of erection of bridges; J. T. Odell in charge of maintenance of way, equipment, &c., with title of General Manager; H. T. Wickham, General Solicitor; E. D. Hotchkiss, General Freight Agent; H. W. Fuller, General Passenger Agent; T. O. Barbour, Treasurer. The headquarters of all these officers will be in Richmond. The office of treasurer has heretofore been kept in New York. The directors are: M. E. Ingalls, C. H. Coster, R. J. Cross, A. J. Thomas, C. P. Huntington, C. Adolph Low, E. Norton, A. E. Orr, and F. O. Barbour. Messrs. Coster, Cross and Thomas are the Committee of Reorganization.

Chicago, Milwaukee & St. Paul.—Alexander Mitchell, Commercial Agent, with headquarters at Salt Lake City, Utah, will hereafter have charge of the passenger business in Utah, and in Idaho and Montana, south of the Northern Pacific.

Chicago, Rock Island & Pacific.—The following have been appointed Division Master Car-Builders: Samuel Pullman, Illinois Division and branches, at Chicago; C. M. Leonard, Iowa and Oskaloosa divisions, at Davenport; C. R. Best, Southwestern Division, at Trenton.

Colorado, Caldwell & Arkansas.—The directors of this Kansas company are: James Hill, J. P. Johnson and L. J. Miles, of Arkansas City; J. W. Ross, E. T. Battin, John L. McAtee, George W. Riley, John W. Nice and S. P. G. Lewis, of Caldwell; J. A. Darraugh and O. Jennings, of Anthony; C. S. Jabes, of Attica; O. C. Ewart and P. D. Cunningham, of Medicine Lodge; C. T. Avery, of Coldwater; T. H. McLaughlin, of Arkansas City, and T. G. Hunter, of Bucklin, Kan.

Cumberland Valley.—At the annual meeting held at Carlisle, Pa., Oct. 2, the following officers were elected: President, Thomas B. Kennedy; Directors, Thomas B. Kennedy, Frederick Wiltts, I. H. Bosler, Wistar Morris, I. N. Du Barry, A. J. Cassatt, George B. Roberts, John P. Green, John Stewart, W. W. Jennings and H. H. Houston.

Duluth, South Shore & Atlantic.—E. V. Sedgwick has been appointed Master Mechanic, with headquarters at Marquette, Mich.

Durham & Northern.—The first annual meeting was held last week, and the following board of directors was elected: Messrs. R. C. Hoffman, W. W. Chamberlaine, R. S. Tucker, D. Y. Cooper, J. Devereux, Jr., and Capt. E. J. Parrish. Major John C. Winder was re-elected President. Mr. John Sherwood was elected Treasurer, to succeed Major W. W. Vass, resigned.

Hornville & Du Quoin.—The incorporators of this Illinois company are: Frank Horn, Thomas Horn, Frank Kettler, M. Laxon and William Jeremiah.

Hudson Tunnel.—At the annual meeting in New York this week the old board of directors was re-elected as follows: Henry H. Perkins, William A. Force, O. A. Gager, F. P. Abbott, C. E. Willing, Henry S. White and A. B. Gibbs. H. H. Perkins is President of the company.

International.—Webster Snyder, Vice-President and General Manager of the Gulf, Colorado & Santa Fe, has been appointed General Manager of this Mexican road.

Kansas City, Fort Smith & Southern.—The following are named as incorporators in the charter filed in Arkansas: L. L. Bash, President, and Thomas Bales, H. M. Freckenger and H. W. Bush, Directors.

Kansas City & Southern.—William E. Gray has been appointed General Superintendent.

Louisville, St. Louis & Texas.—The stockholders held their annual meeting in Louisville last week and the following directors were elected: W. V. McCracken, George A. Evans, New York; J. K. McCracken, James P. Helm, John H. Sample, Louisville; R. R. Pierce, Cloverport, Ky.; J. D. Powers, Owensboro, Ky. The directors elected the following officers: Maj. W. V. McCracken, of New York, President and General Manager; Geo. A. Evans, of New York, Vice-President; Geo. W. Lamkin, Secretary; J. P. Pennington, of New York, Assistant Secretary; James P. Helm, General Counsel; John H. Sample, Chief Engineer.

Missouri Pacific.—Meade Stillwell has been appointed Division Superintendent of the Kansas City section, Lexington Branch, Jefferson City, Boonville & Lexington and Sedalia, Warsaw & Southern divisions, to succeed W. E. Gray, resigned.

New Hampshire Railroad Commission.—John M. Mitchell has been appointed Railroad Commissioner of New Hampshire, to succeed E. B. Sanborn.

Norfolk & Western.—Charles S. Churchill has been appointed Engineer of Maintenance of Way.

Northern Pacific.—A. J. McCabe, Chief Dispatcher, of the Dakota Division, has been appointed Acting Superintendent of the same division, vice J. M. Graham, placed in charge of of construction in Manitoba.

Ogden Union Railway & Depot Co.—The directors of this new company are: John Sharp, P. L. Williams, C. E. Wurtelle, J. V. Parker and James Sharp.

Owensboro, Falls of Rough & Green River.—At a meeting of the stockholders in Owensboro, Ky., Sept. 26, the following officers were elected: H. C. Herr, President; D. M. Griffith, S. M. Dean, R. S. Triplett, S. V. Walden, J. W. Slaughter, A. C. Tompkins, J. A. Fuqua and J. A. Dean, directors.

Pawnee.—The first Board of Directors are as follows: Columbus White, of Taylorville, Ill.; Jacob M. Stark, Charles E. Clayton, of Pawnee; John White and Henry R. Davis, of Pana.

Pittsburgh, Cincinnati & St. Louis.—A. E. Waters has been appointed Trainmaster, succeeding L. E. Skinner, transferred. A. T. Lee having resigned on account of ill health, the position of Assistant Trainmaster has been abolished.

Port Townsend Southern.—F. N. Hill has been appointed Superintendent of Construction, with office at Port Townsend, Wash. Ter.

Richmond & Danville.—President Scott has issued the official notice of the appointment of Mr. T. M. R. Talcott to be First Vice-President. His duty will be to supervise and direct the traffic of the company in all its branches. His office will be at Richmond, Va. W. H. Marbury has been appointed an Assistant Treasurer.

St. Johns, Lake Weir & Gulf.—The following are the officers of the company: William H. Wren, President, Lynchburg, Va.; J. McH. Peters, Vice-President, Oxford, Fla.; Charles H. Almond, Treasurer, Lynchburg, Va.; W. E. McKay, General Manager, Oxford, Fla.

St. Louis, Alton & Terre Haute.—M. B. Mann has been appointed Master of Transportation, with headquarters at Pinckneyville, Ill. The office of the Superintendent will hereafter be at the general office of the company in St. Louis, instead of at Belleville, Ill., as heretofore.

St. Louis & Colorado.—The directors of this new Kansas company are: C. M. Condon, J. C. Pollock and David Jennings, of Oswego; John R. Walker, Thomas Kersey, E. D. Merritt and Edward Bannister, of Springfield, Mo.

St. Paul, Minneapolis & Manitoba.—At the annual meeting in St. Paul, last week, the following directors were chosen for the ensuing year: James J. Hill, St. Paul; John S. Kenneay, Samuel Thorne, D. Willis Jame, New York; T. Jefferson Coolidge, Boston; Henry D. Minot and Allan Manvel, St. Paul. The last named two succeed F. P. Alcott, of New York, and D. C. Shepard, of St. Paul. The directors subsequently met and elected the following officers: President, J. J. Hill, of St. Paul; First Vice-President, Allan Manvel, present general manager of the road; Second Vice-President, W. P. Clough; Secretary, Edward Sawyer; Treasurer, E. T. Nichols, New York. The only change in the executive officers of the road is the substitution of Mr. Manvel as Vice President for John S. Kennedy, making all the officers, except the Treasurer, residents of St. Paul.

Salt Lake & Eastern.—The first board of directors of this company is as follows: J. W. Young, R. W. Sloan, C. W. Hardy, W. A. Rossiter, J. M. Waddell, David Harrington, B. S. Young, J. M. Whitaker and C. S. Booth. J. W. Young holds 592 of the 1200 shares.

Savannah & Western.—Capt. F. Y. Dabney has been appointed Chief Engineer from Savannah to Americus, Ga., and C. O. Parker has been appointed Chief Engineer from Americus to Columbus.

Southern Pacific.—William Patterson has been appointed General Car Inspector of the Pacific system.

Southern Railway & Steamship Association.—At a meeting in Washington, D. C., Oct. 2, J. H. Carter, of Richmond, was elected Commissioner of the Association, to succeed T. M. R. Talcott, resigned, and J. R. Ogden, of Knoxville, Tenn., a member of the Board of Arbitration in place of Mr. Carter.

Tilton & Belmont.—The stockholders at the annual meeting in Concord, N. H., Oct. 3, elected the following board of directors: Charles E. Tilton, S. B. Peabody, F. J. Eastman, E. C. Bean, A. J. Pillsbury, J. F. Jones and George W Fifield. The board subsequently elected Charles E. Tilton President.

Wisconsin Central.—T. C. Clifford, late Superintendent of the St. Paul Division, has been appointed Superintendent of the Chicago Division, with headquarters at Chicago, in place of Mr. W. A. Gardner resigned. A. R. Horn has been appointed Superintendent of the St. Paul Division.

OLD AND NEW ROADS.

New Companies Organized.—Colorado, Caldwell & Arkansas.—Hornville & Du Quoin.—Kansas City, Fort Smith & Southern.—Ogden Union Railway & Depot Co.—Pawnee.—St. Louis & Colorado.—Salt Lake & Eastern.

Bangor & Piscataquis.—The joint special committee of the city government of Bangor, Me., to which was referred the matter of offers to purchase the road, has reported, recommending that neither proposition be accepted. The propositions were made by the Castine & Bangor and the Maine Central.

Batesville & Brinkley.—The gauge of the road was changed last week from narrow to standard between Brinkley and Jacksonport, Ark., and is soon to be extended up Black River Valley.

Birmingham Mineral.—Tracklaying has been commenced on the Huntsville branch at Village Springs, and working north towards Chepultepec.

Cape Girardeau Southwestern—The contracts for the extension from Williamsville, on the St. Louis, Iron Mountain & Southern, to Hunter, Mo., on the Current River Road have been let as follows, commencing from Williamsville: O'Connor & Co., 5 miles; Miller & Seabaugh, 4 miles, and Mr. Randall, of St. Louis, 17 miles; a total distance of 26 miles. It is expected that the road will be opened to Williamsville in December. The 700-ft. tunnel between Wappapello and Williamsville, has delayed the work considerably.

Central, of Georgia.—The company has placed $5,000,000 of new trust bonds, and is about to close arrangements for placing $5,000,000 more, Drexel, Morgan & Co. taking the whole lot at a figure that is not made public.

Charleston, Cincinnati & Chicago.—The road is expected to be completed to Blacks, S. C., by Oct. 10. This gives the road a through line from Charleston to Rutherfordton, N. C., of 290 miles. The South Carolina road from

Charleston to Kingville, S. C., forms part of this line. Seventy six miles of this track has been laid this year. Grading is in progress at the Breaks of the Big Sandy in Kentucky.

Chesapeake & Ohio.—An order was entered by the Circuit Court in Charleston, W. Va., also in court at Richmond, Va., last week, taking the road out of the hands of the Receiver. The road will be reorganized without foreclosure.

Chicago, Evanston & Lake Superior.—The company has filed for record in Illinois a copy of a mortgage made in favor of the United States Trust Co., of New York, to secure an issue of $2,500,000 30-year five per cent. bonds.

Chicago, Kansas & Nebraska.—The extension of the Colorado line is progressing rapidly, and will be completed within three weeks. The road has been opened from Norton to River Bend, Colo., where it connects with the Union Pacific.

Chicago & West Michigan.—The Wagner Sleeping Car Co. has made a contract with the company whereby its sleepers take the place of Pullman cars on the Chicago and Grand Rapids and Chicago and Muskegon lines after Oct. 1.

Cleveland, St. Louis & Kansas City.—It is stated that work will soon commence on the approaches to the bridge across the Mississippi River at Alton, Ill. The contract has been let to S. D. Easton for building that portion of the road between Alton, Ill., and St. Charles, Mo.

Colorado, Caldwell & Arkansas.—Articles of incorporation filed in Kansas for the purpose of constructing a standard gauge road from the town of Bucklin, in Ford County, running thence in a southeasterly direction through the counties of Ford, Kiowa, Comanche, Barber and Harper to a point near the city of Anthony, and thence through the counties of Harper and Sumner to a point near the city of Caldwell, whence it runs through the counties of Sumner and Cowley to a point near Arkansas City. The estimated length is 200 miles, and the capital stock is $2,000,000.

Columbus Southern.—Forty miles of the grading from Columbus, Ga., have been completed.

Cumberland Valley.—Rickert & Keons, of Pottsville, Pa., are the contractors for the building of the line from Martinsburg, W. Va., to the state line, a distance of 13½ miles, and King & Wetherill, of Mahanoy City, Pa., from the state line to Winchester, Va., nine miles. Work is to be finished by April 1, 1889.

Fort Worth Western.—President Lawrence has made a contract with a syndicate for the building of this road, which is projected to extend from Fort Worth, Tex., to Albuquerque, N. Mex., about 328 miles.

Georgia Pacific.—Work has been resumed on the Western extension in Mississippi, and the grading will be finished as rapidly as possible. The recent floods damaged the work considerably. Ninety miles has already been graded. The extension will be laid with rails taken up between Anniston and Covin, Ala., and the last named section will be laid with new 62-lb. steel rails, which the company has already purchased.

Great Northern.—The contract has been let to John McEncree, of Schenectady, for constructing an extension to Ste. Julienne from the present terminus at Glasgow, P. Q. The distance is 18 miles. Work is already in progress, and it is expected to complete the line this fall. C. S. Baker, Montreal is Chief Engineer.

Hornville & Du Quoin.—Articles of incorporation filed in Illinois to build a road from Hornville, Ill., to a point on the Illinois Central in Perry County. The capital stock is $5,000, and the principal office will be at Du Quoin.

Interoceanic.—Mr. Delfin Sanchez has closed a contract with Messrs. Bowes Scott, Read, Campbell & Co., of the City of Mexico, for the construction of 84 kilometres of this railroad. The contract comprises surveying, locating, grading, tracklaying, ballasting, masonry, and telegraph lines, and must be a valuable one if money can be raised to pay for completing it.

Kansas City, Fort Smith & Southern.—The company has filed articles of incorporation in Arkansas for a road to run from a point on the northern line of the state in Benton County, and south through Benton, Washington, Crawford, Sebastian, Scott, Polk, Howard, Sevier and Little River counties to the south line of the state, near Texarkana, a distance of about 190 miles. The capital stock is $3,800,000. The place of business will be Fort Smith.

The city of Neosho, Mo., has raised $20,000 to secure the completion of the road from Joplin to Neosho by Jan. 1. Work will commence soon.

Kansas City & Pacific.—Bethune, Craney Bros. & Co., of St. Joseph, Mo., have been awarded the contract for building the road from its present northern terminal on the eastern line of Anderson County to Paola, Kan., a distance of 32 miles. The contract is to be completed by Dec. 1.

Lake Shore.—In the hearing last week at Concord, N. H., before Chief Justice Doe for an injunction to restrain the directors of the Boston, Concord & Montreal road from aiding in the construction of this road, Judge Doe declined to grant the injunction.

Manhattan.—Judge Andrews, of the Supreme Court, has decided that the question of damages to the owners of private property along the streets occupied by the elevated tracks, which has been the subject of litigation ever since the road was built, may be referred to a special board of commissioners, to be appointed by the Court, in accordance with the provisions of the general railroad act concerning the acquiring of real estate for the purposes of a railroad. Property owners had prosecuted suits before juries, and this decision is in favor of a suit entered by the road for the purpose of taking the question out of the hands of juries and placing it in the hands of an expert commission. The law providing for the appointment of commissioners stipulates that the railroad company must first have made an effort in good faith to agree with property owners and been unsuccessful. The Court was in some doubt as to whether the railroad company had honestly done this, but finally decided that there is no evidence that they have not.

The same opinion decides that news stands on the elevated stations occupy precisely the same position before the law as similar establishments in the stations of surface roads, the legality of which has never been questioned.

Mexican National.—The last spike was driven at 4 o'clock on Saturday afternoon, Sept. 29, at a point about 315 miles from the City of Mexico. A train of five cars left San Luis for the capital. The road will be officially declared open on Nov. 1. The bridge over the Rio Grande has been completed.

Mexican Railroads.—The president, Mr. Edgar T. Welles, of the International Company, which has a grant of a large portion of the peninsula of Lower California on condition of colonization, is now in the City of Mexico with General Counsel Hamersly, Vice-President Dunham, Treasurer Arnold, and Chief Engineer Captain B. Scott. The *Mexican Financier* describes an entertainment given to them by Mr. Luis Hüller, the original concessionaire, at his palatial country seat at Tacubaya: a royal entertainment, graced by the presence of ministers Romero, Rubio and Pacheco. It is understood that the construction of the Peninsular Railway will be shortly commenced. The surveys have already been made. The company's lands are receiving a good class of settlers from this country, England, Sweden and Germany, and it is thought that when the steamer running from San Diego to Ensenada is supplemented by a railroad, the development of the country will be accelerated.

The Mexican Railway has completed a provisional bridge for the transfer of passengers at the barranca of Metlac, and it is hoped that within two weeks the wrecked bridge will be so far repaired as to permit the passage of freight trains.

A line is proposed connecting the National (narrow gauge), International (Huntington) and Central railroads, passing through the Sierra Mojado mining district, and the sugar and cotton growing "Laguna" country. The line is expected to join the Mexican Central at Jimenez, 371 miles south from "Juares," as El Paso is now called, and 144 miles north of Lerdo, the junction of the International with the Central. The construction of this line is expected to increase the mineral output of the Sierra Mojada District from 60,000 to 180,000 tons.

A dispatch states that a syndicate of German capitalists of Chicago will ask from the Government a charter for a road from Bagdad to Matamoras, and thence to the city of Mexico via the coast, connecting with the capital by the railroad to Pachuca. The road will pass via San Fernando, Victoria, Lula and Tampico, with branches to Lota, Lamarina and Tuxpam. The scheme also contemplates deepening the bar at the mouth of the Rio Grande and putting a couple of steam lighters there.

New Westminster, Bellingham Bay & Seattle.—Contracts for grading the road from New Westminster, B. C., to Hope and Whatcom, Washington Ter., will soon be called for. C. M. Sheafe, New Westminster, is General Manager.

Norfolk & Western.—The field location for the West Virginia & Ironton extension from Flat Top Mountain to Ironton, O., about 200 miles, will be made this winter under charge of C. C. Wentworth, Principal Assistant Engineer.

Northern California.—The extension from Marysville to Knight's Landing, Cal., a distance of 27 miles, has been graded as far as Yuba City, and tracklaying will commence when the bridge over Feather River has been completed.

Northern Pacific.—The company has effected a settlement with the county authorities of 22 counties in Dakota, which had advertised the company's lands for sale in October for non-payment of taxes. The road has been paying a tax on gross earnings, which it contended was in lieu of county taxes. The Governor of the territory called a convention of county commissioners, at which the counsel of the road appeared, and it was agreed that the company should pay the amount due on gross earnings, amounting to about $104,000, and the counties should vacate the assessments on the lands for 1887. The road pays taxes on its gross earnings for all traffic originating or terminating in the state, including inter-state traffic. It is said that 19 counties of the state did not join in this compromise. Against these the road will apply for injunctions.

Northwest & Florida.—It is expected to have the extension from Live Oak to Luverne, Ga., completed this month. About two miles of track has now been laid.

Ogden Union Railway & Depot Co.—Charter filed in Utah to construct a road from a point on the main line of the Union Pacific, about half a mile south of Eighth street, in Ogden, and thence northerly to a point on the Central Pacific and to other railroads, warehouses, etc., in the city. The estimated cost of the line, rolling stock, etc., is $600,000, and the capital stock is placed at $300,000.

Pawnee.—The company has filed additional articles of incorporation in Illinois to build a road from Roodhouse to Sullivan, through the counties of Greene, Morgan, Sangamon, Christian, Shelby, and Moultrie. The principal office of the company is to be located at Pawnee, Sangamon County. The capital stock is $100,000.

Piscataquis & Dover.—This company has been organized to build a road to run between Dexter and Dover, Me., about 15 miles, and the estimated cost will be about $250,000. The company has issued $110,000 of stock and $150,000 of bonds. The Maine Central, it is said, will take a lease of the road for 999 years at an annual rental of $12,500. This insures more than 5 per cent. dividends on the stock and 4½ on the bonds.

Pomeroy, Middleport & Syracuse.—This road will extend from Middleport to Syracuse, Ohio, a distance of over ten miles, and will be built in the most thorough manner for the expected large freight and paesenger business. T. William Harris, of the firm T. William Harris & Co., 44 Broadway, New York, is Secretary.

Ripley & Mill Creek Valley.—The road has now been completed and opened for traffic. It extends from Millwood on the Ohio River road to Jackson C. H., W. Va., a distance of 13 miles. The bonds of the company are guaranteed by the Ohio River road.

Rome & Decatur.—The road has been turned over to Receiver R. T. Dorsey by the contractor, D. Callahan, in consequence of an order to that effect by Judge Maddox.

St. Louis & Colorado.—Charter filed in Kansas to build a road from Anthony, Harper County, in a westerly direction through the counties of Harper, Barber, Comanche, Clark, Seward, Stevens and Morton, to a point on the western boundary of the state of Kansas, about 20 miles north of the southeast corner of the state, the entire length of the road being 250 miles. The general office of the company is at Anthony. The capital stock is $5,000,000.

St. Louis, Iron Mountain & Southern.—The company is said to have a force of engineers at work surveying a line between Coffeyville, Kan., and Wagoner, I. T., for an extension of the Kansas & Arkansas Valley line, recently opened to Wagoner.

St. Paul, Minneapolis & Manitoba.—The Cando branch, which has just been completed, extends from Church's Ferry, northward, in Dakota Territory, for a distance of a little over 50 miles. Something like 20 miles of this extension, adjoining the main line, were graded in the letter part of the season of 1886. Then work was dropped. The grading up to the 50-mile limit, however, and the construction of the whole have been done this season. As near as can be estimated at present the new branch will cost the company about $600,000. This Cando branch is the last of the new lines which this company has in hand, though a number of other branches are being built by separate companies in which the Manitoba has as much of an interest as any large system has in lines which are its feeders.

Salt Lake & Eastern.—Articles of incorporation filed in Utah to build a road from a point on the Salt Lake & Fort Douglas road through Parley's Cañon to Park City, a distance of 35 miles. A branch is also to be built to Camas in Summit County. The capital stock is $1,200,000.

Savannah, Florida & Western.—The Thomasville, Tallahassee & Monticello branch was completed last week. It extends from Thomasville, Ga., south to Monticello, Fla., a distance of 24 miles.

Seattle, Lake Shore & Eastern.—The route across the Cascades and into the Big Bend country has been selected. Instead of going through Snoqualmie pass and thence to the Columbia River the road will follow the Snohomish River to and through Cady's Pass in the Cascades, thence by the Wenatchee to the Columbia. The present road to west of the mountains will be used to develop the iron, coal and other deposits in the vicinity of its present terminus.

Silverton.—The stockholders of this Colorado company have voted to increase the capital stock to $350,000, and to build five extensions, as follows: From Red Mountain Park through Uncompahgre canon to Ouray; from near Ouray to the Virginius mine; from near Silverton through Howardsville, Eureka, Animas Fork and Mineral Point to a connection with the main line; from Silverton along the Cement Creek valley; and from Animas Forks to Lake City. C. W. Gibbs of Silverton is Chief Engineer.

Springfield & Connecticut.—The Railroad Commissioners of Massachusetts will give a hearing on Oct. 15, at Springfield, as to whether the public interests require the building of this road, which is the proposed Springfield branch of the Hartford & Connecticut Western. The Massachusetts portion extends from the state line in Agawam, through the towns of Agawam and West Springfield, to a terminus in the city of Springfield, about seven miles.

Southern Pacific.—The extension west from Huron in Fresno County, Cal., has been completed for about 21 miles. A new town called "Coalinga" has been laid out at the end of the track. From the end of this extension recent surveys have been made northwesterly down San Benito Creek Canyon to Tres Pinos, following very nearly the original surveys made for the Southern Pacific main line, which was abandoned in favor of the San Joaquin Valley route, owing to the heavy mountain grades. The construction forces on this line and at Port Costa have been transferred to Elwood, to work on the line from Templeton south to the foot of the mountains, through which there will be a great deal of tunneling in order to reach San Luis Obispo. The work to be done is of a very heavy nature and it is not expected to finish the line before January, 1890.

Ricker, Lee & Co., of Galveston, the contractors for the 57 mile extension from Victoria to Beeville, Tex., have commenced work on the road.

Utah & Northern.—It is stated that the Union Pacific will change the gauge of this line between Ogden to Pocatello to standard next spring and that a corps of engineers will shortly commence to survey a new line, commencing at a point near Deweyville, Utah, and running through the Bear River narrows and along the west side of Cache Valley to a point between Oxford and Swan Lake.

TRAFFIC AND EARNINGS.

Chicago-St. Paul Rates.

It is announced that the long existing difficulties between the northwestern roads have been adjusted; the Chicago, Milwaukee & St. Paul, the Chicago & Northwestern, and the Minneapolis & St. Louis withdrawing their demands concerning milling-in-transit rates. It is stated that they agree to give the non-transit lines a share of the transit freight stopped off at Minneapolis, the proportion to be decided by Chairman Faithorn. The Chicago, Burlington & Northern has consented to advance freight rates to the old tariff, and it was agreed that, taking effect Oct. 10, all rates shall be restored to the basis of 60 cents, first class. The rate on wheat and its product was fixed at 12½ cents. Flour and bran to be shipped on orders then outstanding, if taken by the so-called non-transit roads, shall be paid for by the originating road at such increase over the present rates of 7½ cents as Chairman Faithorn shall decide. This motive for the apparently sudden change of view on the part of the older roads is not explained.

Trunk Line Freight Rates.

Conflicting reports have been sent out concerning the advance in freight rates from Chicago eastward, announced last week. It is now stated that the Pennsylvania will not agree to an advance on grain, provisions or dressed beef, insisting that other lines are taking grain at 20 cents. The New York, Chicago & St. Louis objected to any restoration unless grain rates were included, but was later reported to have withdrawn its objections, and it is now stated that the advanced rates on all classes, except grain, will go into effect Oct. 15.

West-bound Rates.

It has been reported that the Central Vermont expressed a willingness to reduce its differentials on west-bound business to 6, 2, 4, 3, 2, 1, but later accounts are to the effect that it has backed out.

St. Louis East-bound Passnger Rates.

The cutting of fares from St. Louis eastward continues, the last rates reported being $10 St. Louis to New York by the Vandalia, and $8.50 by the Bee Line. The Vandalia sold tickets to Washington at $5, and the Ohio & Mississippi made a round-trip rate to Cincinnati of $3. For some months the Bee Line has, by agreement, been selling to New York at $1.50 below the rate over the Vandalia. It is said that the latter has now complained that this differential is giving the Bee Line an undue advantage, and this complaint is the cause of the present cutting. The rate now in effect over the Bee Line, Lake Shore and New York Central is $3 less than that from Cleveland to New York, thus being at variance with the provisions of the fourth section of the Inter-state Commerce law.

Traffic Notes.

On Tuesday of this week the Canada Atlantic advertised in Ottawa, Ont., round-trip tickets to New York for $1. This cut is due to a rate war between the Canadian Pacific and the Canada Atlantic. Dispatches state, however, that on the appearance of crowds of buyers the agents refused to sell more than a limited number of tickets.

The roads west of the Missouri River have agreed to join the Chicago-Missouri River roads in the adoption of the plan of charging for live stock by weight and prescribing a list of minimum weights. It is stated that the adoption of the change has been postponed in all the territory until Oct. 25 in order that all roads may begin at the same time.

During the first twenty-five days of September the Northern Pacific carried 2,080 second class passengers to Spokane Falls and points west of there, against 865 during the same time last year.

Chairman Blanchard, of the Central Traffic Association

recommends the discontinuance of the union ticket offices in the Palmer House and the Grand Pacific at Chicago, the maintenance of which costs $6,000 each per annum. The individual roads have offices well located to handle the business done at the union offices.

The lines between St. Louis and Kansas City are engaged in competition in the carrying of fast freight. Trains are run through in from 22 to 24 hours. It is said that one of the roads agrees to deliver freight in Kansas City within two hours after its arrival. The distance between the cities is 277 miles by the Wabash Western, 283 by the Missouri Pacific, and about 338 by the lately formed Burlington line over the Hannibal & St. Joseph.

The Chicago, St. Paul & Kansas City has opened its line for Council Bluffs and Omaha business. The route is from Chicago via Conception, Mo., and the Omaha & St. Louis road. The distance is about 600 miles, 500 on the C., St. P. & K. C. and over 100 from Conception to Council Bluffs.

Chairman J. N. Abbott, of the Northwestern Passenger Association, has asked the lines for information regarding their practice in making special rates for employés of the Post Office Department, and also for their views concerning a uniform rule for adoption by lines in the association.

All the roads running west from Chicago, except the Chicago & Alton, have accepted the new westbound transcontinental freight tariff which was prepared by the Southern Pacific, and has been the subject of much controversy, because many rates were as high from Chicago as from New York.

The Illinois Central has notified the Eastern roads that its adherence to Circular A, which made the sale of tickets over its lines by the eastern roads dependent upon the pledge not to pay commissions in eastern territory, has seriously injured its business, and that it will resume the payment of commissions

East-bound Shipments.

The shipments of east-bound freight from Chicago by all lines, for the week ending Saturday, Sept. 29, amounted to 59,298 tons, against 48,927 tons during the preceding week, an increase of 10,371 tons, and against 44,065 tons during the corresponding week of 1887, an increase of 15,233 tons. The proportions were :

	P. c.
Wabash	8 9
Michigan Central	7.4
Lake Shore & M. S	15.3
Pitts., Ft. W. & Chic	14.-
Chicago, St. L. & Pitts	12.9
Baltimore & Ohio	8.2
Chicago & Grand Trunk	14.2
N. Y., Chic. & St. L	6.9
Chicago & Atlantic	12.0
Total	100.0

Of the above shipments 4,117 tons were flour, 25,622 tons grain, 3,465 tons cured meats, 1,897 tons lard, 8,002 tons dressed meats, 1,229 tons butter, 1,333 tons hides, 390 tons wool, and 3,582 tons lumber.

The Lake Shore Road carried the greatest share of the shipments, the three Vanderbilt lines carrying 29.9 per cent. against 27.1 per cent. by the two Pennsylvania lines.

Cotton.

The cotton movement for the week ending Sept. 28 is reported as follows, in bales :

Interior markets :	1888.	1887.	Decrease.	P. c.
Receipts	88,258	147,886	59,628	40.4
Shipments	63,292	111,479	48,187	43.2
Stock	61,474	118,961	57,487	48.3
Seaports :				
Receipts	128,399	238,745	110,346	46.2
Exports	49,505	131,445	81,940	62.3
Stock	253,782	377,689	123,907	32.8

Coal.

The coal tonnages for the week ending Sept. 29 are reported as follows, in tons :

	1888.	1887.	Increase.	P. c.
Anthracite	889,553	711,248	178,305	25.7
Bituminous	390,942	278,673	60,269	21.5

The Cumberland coal trade for the week ending Oct. 2 amounted to 76,409 tons, and for the year to that date 2,653,116 tons.

The coal and coke tonnage of the Pennsylvania originating on lines east of Pittsburgh and Erie for the week ending Sept. 22, and the year to that date, was as follows:

	Coal.	Coke.	Total.
Total for week ending Sept. 22..	223,408	83,883	307,291
Total for year 1888 to date..	8,427,903	2,826,183	11,254,086
Total for year 1887 to date	7,429,944	2,514,415	9,944,359

The anthracite coal tonnage of the Belvidere division of the United Railroads of New Jersey division for the same periods was as follows :

	1888.	1887.	Inc. or Dec.
Total for week ending Sept. 22..	38,839	15,792	I. 23,046
Total for year	1,173,114	1,178,586	D. 5,472

Railroad Earnings.

The statement of the Philadelphia & Reading Railroad and Coal & Iron companies for August, and the first eight months of the fiscal year, is as below:

Month of August :

	1888.	1887.	Inc. or Dec.
Railroad Co.:			
Gross earnings	$2,014,569	$2,055,764	D. $41,195
Expenses, excluding rentals and interest	942,892	928,299	I. 14,594
Net earnings	$1,071,676	$1,127,465	D. $55,789
Coal & Iron Co.:			
Gross earnings	2,438,162	1,979,716	I. 458,445
Expenses, excl. interest	*2,209,489	1,746,443	I. 653,046
Net earnings	$38,673	$233,273	D. $194,600
Total of both companies:			
Gross earnings	4,452,730	4,035,480	I. 417,250
Expenses	3,342,381	2,674,742	I. 667,640
Net earnings	$1,110,348	$1,360,738	D. $250,390

Eight months—Jan. 1 to Aug. 31:

			Decrease.
Railroad Co., net	$6,702,219	$7,918,220	$1,216,001
Coal & Iron Co., net	101,942	634,532	532,590
Both co's., net	6,804,161	8,552,753	1,748,592

*The amount charged to operating expenses, and credited to sinking fund for August, 1888, is $58,938, making the total to date, $586,571.

Month of August:

	1888.	1887.	Inc. or Dec.
Tonnage carried paying freight (2,000 lbs. p. ton)	1,795,908	1,742,550	I. 53,358
Passengers carried	1,585,966	1,538,369	I. 47,597

Eight months to Aug. 31:

Tonnage carried paying freight	12,942,604	13,137,036	D. 194,432
Passengers carried	11,739,273	11,378,129	I. 360,144

The earnings of the New York Central & Hudson River for the three months and the year ending Sept. 30 is as follows, the earnings for 1888 being partly estimated:

Three months to Sept. 30:	1888.	1887.
Gross earnings	$9,474,000	$9,550,074
Oper. expenses	(69 p. c.) 6,550,000	(63 p. c.) 6,063,068
Net earnings	$2,924,000	$3,487,006
Fixed charges	1,962,000	1,889,324
Profit	$962,000	$1,597,682
Dividend	(1 p. c.) 894,283	(1 p. c.) 894,283
Surplus	$67,717	$703,399
Year to Sept. 30:		
Gross earnings	$36,117,000	$35,297,056
Oper. expenses	24,628,000	22,388,623
Net earnings	$11,489,000	$12,908,432
First charges	7,826,500	7,760,924
Profit	$3,662,500	$5,147,508
Dividend	(4 p. c.) 3,577,132	(4 p. c.) 3,577,132
Surplus	$85,368	$1,570,376

The operating expenses for this year, as shown above, include $2,700,000 (partly estimated) expended for renewals and additions to rolling stock, enlargements and betterments of terminals and stations, strengthening bridges and improving general condition of track.

The statement of earnings and expenses of the Norfolk & Western for August, and the eight months to Aug. 31, is as follows:

Month of August :

	1888.	1887.	Inc.	P.c.
Earnings from				
Passenger, mail and exp.	$98,682	$92,469	$6,213	7
Freight	334,246	292,563	41,683	14
Gross earnings	$432,928	$385,032	$47,896	12
Expenses and taxes	260,108	215,417	44,691	21
Net earnings	$172,820	$169,615	$3,205	2
P. c. of ex. to gross earn.	60	56		

Jan. 1 to Aug. 31:

Earnings from				
Passenger, mail and exp.	$629,813	$499,665	$140,148	28
Freight	2,524,375	2,069,914	424,461	20
Gross earnings	$3,164,188	2,599,579	$564,610	22
Expenses and taxes	1,933,368	1,575,588	357,780	23
Net earnings	$1,230,820	$1,023,991	$206,830	20
P. c. of ex. to gross earn.	61	61		

The following is the August statement of the Baltimore & Potomac:

	1888.	1887.	Increase.
Gross earnings	$133,940	$116,227	$17,713
Oper. expenses	74,869	67,253	7,616
Net earnings	$59,071	$48,974	$10,097

The statement of the Philadelphia & Erie for August shows:

	1888.	1887.	Increase.
Gross earnings	$476,844	$381,050	$95,794
Oper. expenses	272,081	234,289	37,792
Net earnings	$204,763	$146,761	$58,202

The statement of the Pennsylvania Railroad, embracing all lines east of Pittsburgh and Erie, for the month of August and the eight months to Aug. 31 is as follows:

August:	1888.	1887.	Increase.
Gross earnings	$5,390,939	$5,022,012	$368,927
Oper. expenses	3,241,517	3,114,476	127,041
Net earnings	$2,149,422	$1,907,536	$241,886
Eight months:			
Gross earnings	$38,071,549	36,047,106	2,024,443
Oper. expenses	25,630,958	23,681,646	1,940,312
Net earnings	$12,440,591	$12,365,460	$75,131

All the lines west of Pittsburgh and Erie for the eight months of 1888 show a deficiency in meeting all liabilities of $114,715, a loss as compared with the same period in 1887 of $607,846.

Receiver John McNulta, of the Wabash Railway, has issued his report of receipts and disbursements for the month of August, as follows:

Cash on hand July 31	$245,151	
Receipts	906,582	
		$1,151,733
Disbursements		790,304
Cash on hand Aug. 31		$361,429

The receipts and disbursements from Jan. 1 to Aug. 31 were as follows:

RECEIPTS.

From operation of road	$15,351,033

DISBURSEMENTS.

For operation of road	$12,305,131	
For track rentals	278,367	
Taxes	469,678	
For interest on first mortgage bonds	1,588,063	
Allowances to bondholders and counsel	60,886	
Miscellaneou	270,763	
Payments account steamer line	16,714	
		$14,989,602
Cash on hand Aug. 31		361,431

The Northern Central furnishes the following comparative statement of its gross earnings and operating expenses for the month of August:

	1888.	1887.
Gross earnings	$600,204	$608,628
Operating expenses	407,876	389,526
Net earnings	$192,327	$219,101

Eight months ended Aug. 31:

	1888.	1887.
Gross earnings	$4,062,691	$4,226,557
Operating expenses	2,754,495	2,563,238
Net earnings	$1,308,196	$1,663,318

The statement of the Louisville, New Orleans & Texas for August shows:

	1888.	1887.	Inc. or Dec.
Gross earnings	$156,929	$134,174	I. $22,755
Expenses	132,410	103,368	I. 29,042
Net earnings	$24,519	$30,806	I. $6,287

The following is a comparative statement of the earnings of the Union Pacific for August and the eight months to Aug. 31 :

August :	1888	1887.	Inc. or Dec.
Gross earnings	$2,587,355	$2,536,598	I. $50,757
Oper. expenses	1,512,896	1,320,947	I. 191,949
Net earnings	$1,074,459	$1,215,651	D. $141,192
Jan. 1 to Aug. 31 :			
Gross earnings	$18,625,000	$18,037,863	I. $587,137
Oper. expenses	11,553,159	10,971 550	I. 581,600
Net earnings	$7,071,841	$7,066,304	I. $5,537

The Denver & Rio Grande Western statement for August shows:

	1888.	1887.	Inc. or Dec.
Gross earnings	$116,815	$118,217	D. $1,402
Oper. expenses	90 089	80,729	I. 9,360
Net earnings	$26,726	$37,488	D. $10,762

Earnings of railroad lines for various periods are reported as follows:

Month of August :

	1888.	1887.	Inc. or Dec.	P.c.
Allegheny Valley	$185,713	$192,725	D. $7,012	3 6
Net	79,655	83,483	D. 3,828	4.6
Balt. & Potomac	133,940	116 227	I. 17,713	15.2
Net	59,071	48,974	I. 10,097	20 6
Cleve. & Canton	34,382	33,097	I. 1,285	3 9
Net	11,533	12,516	D. 983	7.8
C., C., C. & I	722,631	764,833	D. 42,202	5.5
Net	259,306	300,564	D. 41,258	13.7
Det., B. C. & Al.	40.221	52,804	D. 12,583	23.8
Net	9,800	20,786	D. 10,986	52 8
Mem. & Char.	122,573	139,087	D. 16,514	11.8
Net	3,048	21,584	D. 18 536	85.8
Mil., L. S. & W.	315,850	366 906	D. 51,056	31.9
Net	154,288	161,299	D. 7,011	4.3
N. Y., L. E. & W.	2,440,766	2,411,831	I. 28,935	1.2
Net	899,806	842,924	I. 56,882	6.7
Net due leased ls.	681,052	611,768	I. 69,284	11.3
Norfolk & West.	432 928	385,032	I. 47,896	12 4
Net	172,820	163 615	I. 3,205	1.8
Northern Central	600,205	608,628	D. 8,423	1.3
Net	193,328	219,102	D. 26,774	12.2
Pennsylvania	5,390,939	5,022,012	I. 368,927	7.1
Net	2,149,422	1,907,536	I. 241,886	12.6
Phila. & Erie	476,845	381,051	I. 95,794	25.1
Net	204,763	146,761	I. 58,002	39.5
Phila. & Read	2,014,568	2 055,764	D. 41,196	2 0
Net	1,071,676	1,127,465	D. 55,789	4.9
Coal & I. Co.	2,438,162	1,979 716	I. 454,446	23.2
Net	38,673	233,273	D. 194,600	83.4
Total both Cos.	4,452,750	4,035,480	I. 417,250	10 3
Net	1,110,348	1,360,738	D. 250.390	18.3
Tenn. C. & I. Co.				
Net	56,600	36,400	I 20 200	55.5
Wash., O. & W.	14,830	15,142	D. 312	2.1
Net	7,244	7,676	D. 432	5 6
W. Va. Cent. & P.	63,870	39,218	I. 24,65:	62.8
Net	16,045	11,914	I. 4,131	34.7
Total (gross)	$15,428,423	$14,564,073	I. $864,350	5.9
Total (net)	5,329,477	5,315,472	I. 14,005	0 3

Month of July:

Den.,So. Pk. & P.	109,058	126,337	D. 17,279	13.7
Net	10,182	25,754	D. 15,572	60.3
Lake E. & W.	179,289	179,327	D. 38	....
Net	65,468	74,763	D. 9,295	12.4
New Brunswick	75,609	72 344	I. 3,265	4.5
Net	19,289	23,340	D. 4,051	17.3
Oreg. Short Line.	224,094	174,872	I. 47,222	27.0
Net	102,208	76,100	I. 26,108	34.3
Southern Pac. Co:				
Pacific System.	2,947,469	2,467,162	I. 480,307	19.4
Net	1,089,613	1,202,943	D. 113,330	9.4
Total (gross)	$3,533,519	$3,020 042	I. $513,477	17.0
Total (net)	1,286,760	1,402,900	D. 116,140	8.2

Eight months—Jan. 1 to Aug. 31:

Allegheny Valley	1,327,664	1,302,592	I. 25.072	1.9
Net	527.640	482,888	I. 44,752	9.2
Balt & Potomac.	1,006,524	934,872	I. 71,652	7.6
Net	327,267	331,664	D. 4,397	1.3
Cleve. & Canton	249,355	234,635	I. 14,720	6.3
Net	76,918	60,999	I. 15,919	27.0
Cl., C., C. & I	4,798,641	4,956,449	D. 157,808	3.2
Net	1,248,217	1,583,218	D. 335,001	21.2
Det., B. C. & Al.	323 287	322,463	I. 424	0 1
Net	121,350	150,236	D. 28.886	19.2
Memphis & Chas.	1,014,033	1,024,126	D. 10,093	1.0
Net	173,279	175,387	D. 2,108	1.2
N. Y., L. E. & W.	17,666,146	17,240.698	I. 425,448	2.5
Net	6,176,699	5,977,486	I. 199,213	3 3
Net less due leas. l.	4,644,526	4,494,368	I. 148,558	3.3
Norfolk & West.	3,164,188	2,599.579	I 564,609	21.7
Net	1,230,820	1,023 991	I. 206,829	20.2
North. Central	4,062,692	4,226.557	D. 163,865	3.9
Net	1,308,196	1,663.319	D. 355,123	21.3
Pennsylvania	38,071,549	36,047,106	I. 2,024,443	5.6
Net	12,440,591	12,365,460	I. 75,131	0.6
Phila. & Erie	2,815,487	2,632 428	I. 183 059	7.0
Net	1,137,706	1,089,994	I 87,712	4.4
Phil. & Reading	13,102,192	14,034 919	D. 932,727	6 6
Net	5,908,588	7,249,928	D. 1,341,340	18.5
P. & R. C. & I.	11,401,123	11 404,201	D 3,078	....
Net	148,145	656,182	D. 508,037	77.4
Total both Cos.	24,503,315	25,439,119	D. 935,804	3.7
Net	6,056,732	7,906,108	D. 1,849 376	23.4
Tenn. C. & I. Co.				
Net	453,800	394,600	I. 59,200	15.0
Wash O. & W.	75,314	73,327	I. 1,987	2.7
Net	15,277	21,247	D. 5,850	27.6
W. Va. Cent. & P.	397,828	217,178	I. 180,650	83.1
Net	128,174	68,484	I. 59,690	87.1
Total (gross)	$99,476,023	$97,251,529	I. $2,224,494	2 3
Total (net)	30,968,566	32,900,461	D. 1,931,895	5.9

Seven months—Jan. 1 to July 31:

Den.So.Pk.& Pac.	620 413	720,174	D. 99,758	13.9
Net	def. 45,191	17,042	D. 62,233	....
Lake E. & West.	1,102 373	1,129,448	D. 27,075	2.4
Net	356,830	405,131	D. 48 301	11.9
Oreg. Short Line	1,397,870	1,096,686	I. 701,184	27.4
Net	608,788	331,113	I. 277,675	83.9
Southern Pac. Co.				
Pac. System	19 549,542	15,082,841	I. 4,466,701	29.6
Net	6,881,635	6,623,781	I. 257,854	3.9
Total (gross)	$22,670,201	$18,029,149	I. $4,641,052	25.2
Total (net)	7,802,062	7,377,067	I. 424,995	5.9

Early reports of monthly earnings are usually estimated in part, and are subject to correction by later statements.

ANNUAL REPORTS.

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the current volume of the *Railroad Gazette :*